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1914

University of California Bulletin

THIRD SERIES. Vol. VII, No. 12

COLLEGE OF AGRICULTURE

ANNOUNCEMENT

OF

FARMERS' SHORT COURSES

AT THE

UNIVERSITY FARM, DAVIS, CALIFORNIA

OCTOBER 5 TO NOVEMBER 14, 1914

MAY, 1914

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ORGANIZATION OF THE UNIVERSITY

The University of California is an integral part of the public educational system of the State. As such it completes the work begun in the public schools. Through aid from the State and the United States, and by private gifts, it furnishes instruction in literature and in science, and in the professions of engineering, art, law, medicine, dentistry, and pharmacy. In the Colleges of Letters, Social Sciences, Natural Sciences, Commerce, Agriculture, Mechanics, Mining, Civil Engineering, and Chemistry these privileges are offered without charge for tuition, to all residents of California who are qualified for admission. Non-residents of California are charged a tuition fee of ten dollars each half-year. In the Professional Colleges, except that of Law, tuition fees are charged. The instruction in all the colleges is open to all qualified persons, without distinction of sex. The Constitution of the State provides for the perpetuation of the University, with all its departments.

Letters of inquiry concerning the College of Agriculture should be addressed to the *Dean of the College of Agriculture, Berkeley, California.*

For the following circulars of information concerning the several colleges and departments of the University apply to the *Recorder of the Faculties, University of California, Berkeley, Cal.*

1. The Circular of Information, Academic Departments (Colleges of Letters, Sciences, and Engineering, and the first two years of Medicine). Containing general information about the University, its organization, government, faculties, requirements for admission both to graduate and undergraduate status, requirements for degrees and teachers' recommendations, expenses.

2. The Annual Announcement of Courses of Instruction in the Academic Colleges. Published annually in July. Price 10 cents. Sent by mail by the Recorder of the Faculties for 15 cents.

3. The Announcement of the Summer Session in the Academic Colleges, published annually in March. Sent free.

UNIVERSITY OF CALIFORNIA
COLLEGE OF AGRICULTURE
BERKELEY

AGRICULTURAL EXPERIMENT STATION
BENJ. IDE WHEELER, PRESIDENT
THOMAS FORSYTH HUNT, DEAN AND DIRECTOR
H. E. VAN NORMAN, VICE-DIRECTOR AND DEAN
UNIVERSITY FARM SCHOOL

ANNOUNCEMENT

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UNIVERSITY OF CALIFORNIA PRESS
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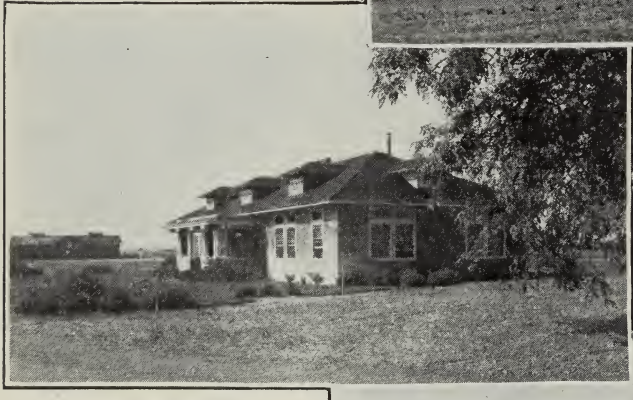
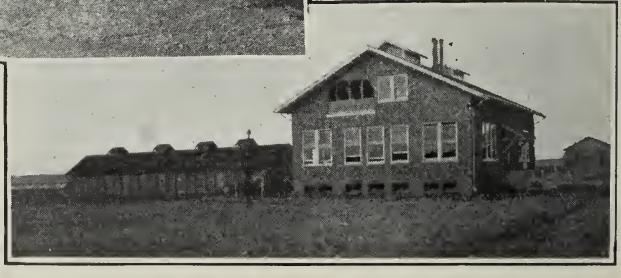
Dairy
Building.

Water Tower
and Horticulture
Building.



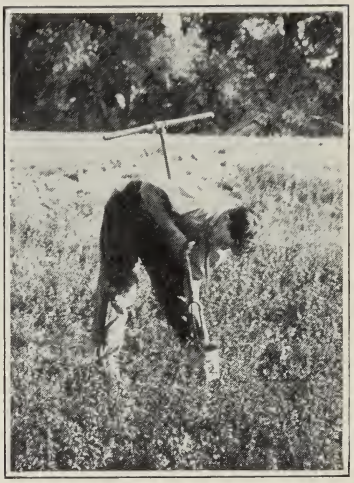
Animal
Husbandry.

Poultry
Husbandry.



There are few more interesting places in California today than the University Farm, with its experimental work, its instruction to University students, and with its more than two hundred farm school students.

THE SHORT COURSES



Success in farming depends in large measure on knowing one's soil types.

There have been 779 persons who have taken advantage of the short courses since they were established in 1908. These brief courses have enabled many men to improve their farming operations and have given them greater enthusiasm for their work. Instruction is given in practically every known field of agriculture. There is no State in the Union where the agriculture is so diverse. To meet this situation the Department of Agriculture of the University of California has found itself compelled to offer instruction in the widest possible range of subjects. An examination of the Schedule of Studies, beginning on page 11, will show how rich is the programme which is offered during the six weeks beginning October 5, 1914. The student is taught by lectures and also by practical exercises. He is required to do things which will make him more expert in his several stock raising, dairying, and fruit growing activities. To test milk, to judge live stock, to immunize hogs and perform simple surgical operations are but a few of the practical things a student is taught to do. Altogether there are 293 lectures and 258 practical exercises. Only about one-third of them can be taken by one person in any one year. For this reason a number of persons have spent several sessions at these short courses.

THE UNIVERSITY FARM

There are few more interesting places in California today than the University Farm with its experimental work, its instruction to University students, and with its more than two hundred farm school students. This farm, which was purchased in accordance with a California statute of 1905, comprises 779 acres

of fine alluvial soil. It is situated at Davis, Yolo County. On this farm are grown a variety of products both by dry farming and by irrigation. The investigations on the duty of water are probably unequalled anywhere. There is a most complete collection of devices for measuring water. These are installed so that their actual operation may be seen and understood. Last year there were 63 experimental plats of wheat and 41 plats of barley. The rainfall for the two years ending June 30, 1913, was only $18\frac{3}{10}$ inches. The average yield on these plats without irrigation, was 39 bushels of wheat and 91 bushels of barley. Would it not be worth while not only to learn but to see how this was done?

BUILDINGS AND EQUIPMENT

University Joe, bred and fed at the University Farm, dressed 70.97 per cent, is said by the Western Meat Company to have made the best carcass ever dressed in their plant.

The farm is provided with buildings for instruction in the various phases of agriculture and horticulture including a commercial creamery, stock pavilion, horticulture building, mechanical shops, three dormitories, a dining room, and buildings for horses, dairy cattle, beef cattle, sheep, poultry, and swine. There are 200 head of cattle with the following represented: Holstein-Friesians, Jerseys, Guernseys, and Ayrshires among the dairy breeds and Herefords, Short Horns, Aberdeen Angus among the beef breeds. There are the following breeds of sheep: Shropshires, Hampshires, Southdowns, Cotswolds, and Merinos. In the aggregate, there are about 125 specimens. Hog raising is highly developed. The total number

of hogs handled each year is about 200, representing the Poland-China, Berkshire, Duroc Jerseys, Tamworth, Chester White, and Large Yorkshire. There are 20 acres of vineyards and 363 varieties of grapes. There are almond, peach, prune, and apricot orchards, involving 15 acres. Budding, grafting, pruning, and spraying are all taught by actual practice. The commercial dairy operated in connection with the butter, ice cream, and cheese making laboratories, gives most thorough instruction in dairy manufacturing. The total sales of dairy products during the year ending June 30, 1913, amounted to more than $56,000.

BENEFITS

Holstein-Friesian with record of 783 pounds of butter fat.

The purpose of the short courses in Agriculture is to afford opportunity for those particularly of mature years and ranch experience to acquire some knowledge of the application of science and the results of the latest investigations in practical ranch work in the production of fruit, grains, and live stock of various classes. The rapidity with which the science of Agriculture has developed and the many ways in which ranch losses may be reduced and profits increased make it highly desirable for the up-to-date rancher to add the fruits of the latest research to his own practical experience.

Not the least of the benefits of these short courses is the contact which the student has with other progressive men, leaders in their community, who have left their business for a short time to acquire that which may be of immediate use to them.

NUMBER OF COURSES

The four short courses offered during the fall of 1914, beginning October 5 and continuing until November 14, are Agriculture, Horticulture, Poultry Husbandry, and Dairy Manufactures. The three courses previously given of General Agriculture, Dairy Production, and Live Stock Production have been combined in such a way that all the work is included in the one course called Agriculture.

ADMISSION

There are no entrance examinations and no restrictions as to sex, but applicants must be at least eighteen years of age.

EXPENSES

Board may be secured at the dining hall on the University Farm for $5 per week; rooms at the dormitories for from $6 to $10 per month. Similar prices prevail in the town of Davis.

BOOKS AND SPECIAL CLOTHING

Dairy students are required to wear white suits, which may be purchased in Davis at $1 per suit or brought from home. Other students will find it desirable to have overalls for working around stock and machinery. Books and other necessary supplies may be purchased in Davis.

Aberdeen Angus steer calf used in teaching students to judge cattle.

FEES AND DEPOSITS

A registration fee of $2 is charged each student. In the courses which include milk testing a deposit of $3 for breakage is also charged, but such portion as is not needed to pay for breakage will be returned. The full fee and

deposit for each course are to be paid whether the participant is present the whole or only part of the course.

RAILROAD RATES

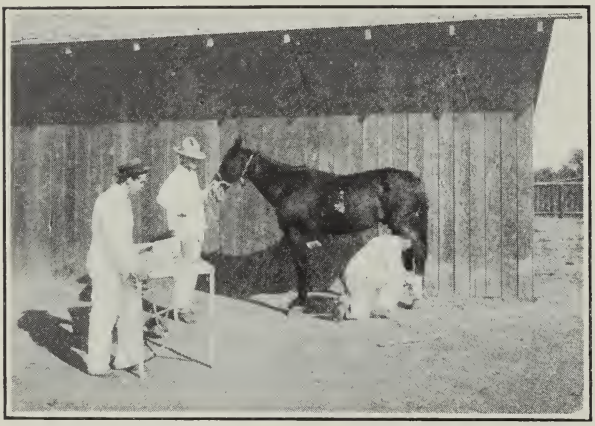
Attendants upon the short courses may secure a round trip rate of one and one-third lowest first-class fare on the receipt certificate plan from all stations on the Santa Fe and Southern Pacific and Western Pacific railroads in California, including Reno, Nevada. Stopover privileges may be secured on the going trip if the agent at the initial point is asked for ticket allowing such privileges and by paying the regular stopover fare. No stopovers are allowed on the return trip. In all cases ask for receipt-certificate when purchasing ticket to Davis.

For further information address Dean, University Farm School, Davis, California.

The University Farm School has three dormitories and a dining hall for the accommodation of students.

THE SHORT COURSE IN AGRICULTURE

OCTOBER 5 TO NOVEMBER 14, 1914



The veterinary clinic affords opportunity for students to obtain instruction concerning the common diseases of animals.

The course in Agriculture is designed as a combination of the three short courses in General Agriculture, Animal Husbandry, and Dairy Production, given separately heretofore, and is so planned as to meet the needs of farmers following any of these lines of agriculture. Any man who is a grain farmer, a stock raiser, or a dairyman, or who intends to engage in any of these activities will be greatly benefited by this course. If it enables him to save just one horse or increase his dairy production 5 per cent or the yield of barley two bushels per acre he will be amply repaid for the time and expense of the course. Some of the special subjects are outlined below:

Animal Husbandry.—The work offered in Animal Husbandry includes lectures and demonstrations dealing with the breeding, feeding, care and management and judging of the various pure breeds and market classes of farm animals.

Farm Management.—A portion of the time to be taken up with discussion of a sample farm carried through the process of choosing, getting capital, general plan of work, layout of fields, equipment, character of crops, probable yields, selling product, accounting, cost data, leasing portion, selling portion, law questions, hiring men, and kindred subjects.

Farm Mechanics.—A study of the farm implements and machinery applicable to California agriculture; practice work in handling gas engines, valve grinding, ignition, etc.; electric motors; power machinery; rural lighting plants; pumping; factors concerned in the construction of farm buildings, use of the steel square, etc.; forge work, welding and tempering.

Practical blacksmithing is of great value to the successful farmer.

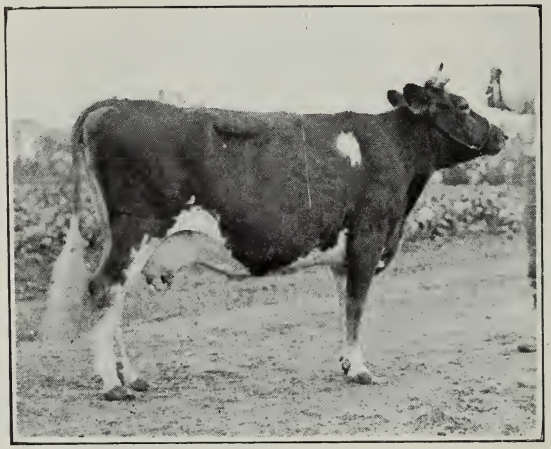
Field and Forage Crops.—The work on Field and Forage Crops will consist of lectures covering the fundamental principles of dry farming, the successful growing of grain, forage and cover crops; with practice work in the comparative study of crop varieties, seed selection and grain judging.

Irrigation.—This consists of a study of soil moisture and its relation to plant growth. The units of measurement of water, with lectures and field demonstrations illustrating the necessity of, and methods of measuring water. The preparation of land and methods of irrigating alfalfa, orchards, field crops, etc., especial

Irrigation surveying is included in the courses of instruction.

attention being given to the water requirements, proper time of irrigation, costs and returns, methods and cost of construction of farm laterals, head gates, concrete pipe lines, etc., and the use of flumes, pipe lines, etc., in the delivery of water. Design and construction of pumping plants and reservoirs and their use in irrigation practice.

When possible, the above work will be illustrated by field demonstrations dealing with practical irrigation problems.



Seven breeds of cattle are kept for instructional purposes.

Veterinary Science.—The care and treatment of sick animals; treatment for common diseases and ailments; minor operations; practice work bearing directly on the course given.

In addition to the subjects above mentioned, lectures and practice in horticulture and dairying are given to students in the short course in Agriculture. Following is a complete daily programme of studies. It is only by a careful study of this schedule that a prospective student can understand the opportunity that is presented for increasing his earning power.

SCHEDULE OF THE SHORT COURSE IN AGRICULTURE

OCTOBER 5 TO NOVEMBER 14, 1914

Oct. 5—	8:00– 9:00	Lecture: Babcock Test for Butterfat in Milk. H. H. Douglass.
	9:00–11:00	Practice: Testing Laboratory. H. H. Douglass.
	11:00–12:00	Lecture: Origin and Formation of Soils. C. F. Shaw.
	1:00– 3:00	Practice: Soils. Alfred Smith.
	3:00– 5:00	Lecture and Practice: Examination of Horses for Soundness. F. M. Hayes.
Oct. 6—	8:00– 9:00	Lecture: General Considerations; Nursery Stock and Choice of Stocks for Soils. Planting. R. H. Taylor.
	9:00–10:00	Lecture: Irrigation Resources and Conditions in California. Frank Adams.
	10:00–11:00	Lecture: Principles of Dry Farming. B. A. Madson.
	11:00–12:00	Lecture: Breeds of Beef Cattle. G. H. True.
	1:00– 2:00	Lecture: What Farm Management is and Its Scope; Qualifications of a Good Farm Manager, Present Application of Farm Management to California Conditions. R. L. Adams.
	2:00– 4:00	Practice: Judging Beef Steers. G. H. True.
Oct. 7—	8:00– 9:00	Lecture: Budding. R. H. Taylor.
	9:00–10:00	Lecture: Conservation of Moisture. B. A. Madson.
	10:00–11:00	Lecture: Gas Engines. F. L. Peterson.
	11:00–12:00	Lecture: Origin and Formation of Soils. C. F. Shaw.
	1:00– 3:00	Practice: Soils. Alfred Smith
	3:00– 5:00	Lecture and Clinic: Digestive Diseases of the Horse. F. M. Hayes.
Oct. 8—	8:00– 9:00	Lecture: Handling the Pure-Bred Herd. G. H. True.
	9:00–10:00	Lecture: Irrigation Laws and Organization of Irrigation Districts Frank Adams.
	10:00–11:00	Lecture: Wheat Culture. B. A. Madson.
	11:00–12:00	Lecture: How Farm Management Covers the Choice of a Ranch, Layout of Fields, Equipment, Capital, etc. R. L. Adams.
	1:00– 3:00	Practice: Farm Management. R. L. Adams.
	3:00– 5:00	Practice: Judging Beef Cows. G. H. True.
Oct. 9—	8:00–10:00	Practice: Cream Separator. H. H. Douglass.
	10:00–11:00	Lecture: Feeding for Market. G. H. True.
	11:00–12:00	Lecture: Valve Grinding, Ignition, Adjustment. F. L. Peterson.
	1:00– 3:00	Practice: Judging Beef Bulls. G. H. True.
	3:00– 5:00	Practice: Handling Gas Engines, etc. F. L. Peterson.

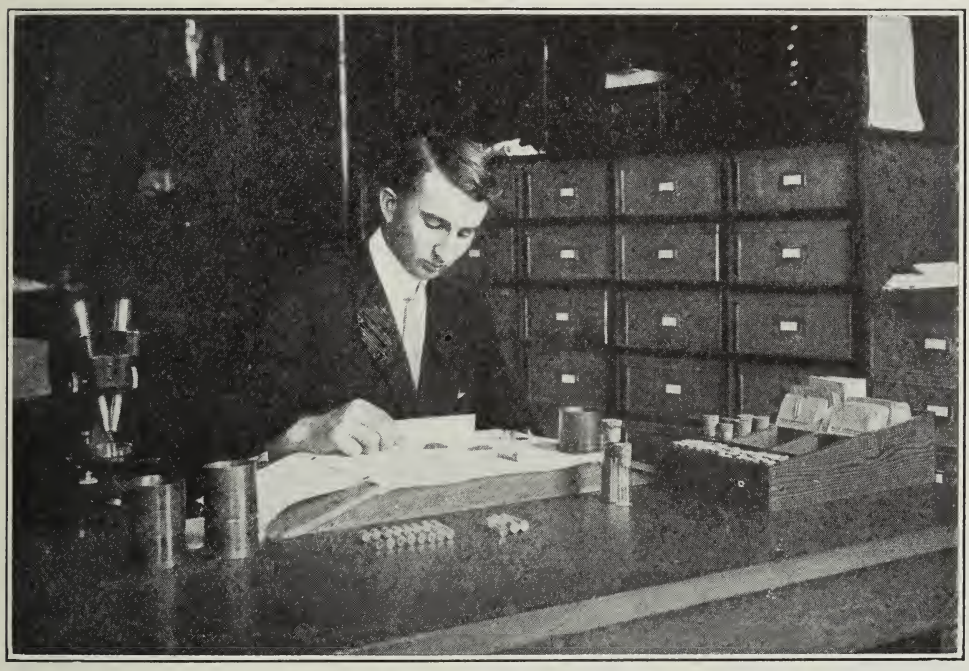
Oct. 10— 8:00–10:00	Practice: Farm Crops.	B. A. Madson.
10:00–12:00	Lecture: Soil Moisture and Its Relation to Plant Growth.	O. W. Israelson.

Oct. 12— 8:00– 9:00	Lecture: Separator Management.	H. H. Douglass.
9:00–11:00	Practice: Testing Laboratory.	H. H. Douglass.
11:00–12:00	Lecture: Soil Texture, Structure and Humus.	C. F. Shaw.
1:00– 3:00	Practice: Soils.	Alfred Smith.
3:00– 5:00	Lecture and Practice: The Teeth of the Horse.	F. M. Hayes.
Oct. 13— 8:00– 9:00	Lecture: Protection from Wind, Frost and Animals such as Gophers, Rabbits, etc.	R. H. Taylor.
9:00–10:00	Lecture: Selection of an Irrigated Farm and Sources of Water Supply.	S. H. Beckett.
10:00–11:00	Lecture: Wheat Culture.	B. A. Madson.
1:00– 2:00	Lecture: Planning the Farm Work, Rotations, Cropping Systems, etc.	R. L. Adams.
2:00– 4:00	Practice: Judging Market Hogs.	J. I. Thompson.
Oct. 14— 8:00– 9:00	Lecture: Care of Orchards. Rejuvenation of Rundown Orchards. Tillage.	R. H. Taylor.
9:00–10:00	Lecture: Barley Culture.	B. A. Madson.
10:00–11:00	Lecture: Electricity, Electric Motors, etc.	F. L. Peterson.
11:00–12:00	Lecture: Soil Moisture—Forms, Amounts, Movements.	C. F. Shaw.
1:00– 3:00	Practice: Soils.	Alfred Smith.
3:00– 5:00	Lecture and Clinic: Wounds and Their Treatment.	F. M. Hayes.
Oct. 15— 8:00– 9:00	Lecture: Care of Brood Sow and Pigs.	J. I. Thompson.
9:00–10:00	Lecture: Units of Measurement and Methods of Measuring Water.	S. H. Beckett.
10:00–11:00	Lecture: Oat Culture.	B. A. Madson.
11:00–12:00	Lecture: Economizing and Eliminating Waste.	R. L. Adams.
1:00– 3:00	Practice: Farm Management.	R. L. Adams.
3:00– 5:00	Practice: Judging Poland-China Hogs.	J. I. Thompson.
Oct. 16— 8:00–10:00	Practice: Market Milk.	H. H. Douglass.
10:00–11:00	Lecture: Growing Pigs for Market.	J. I. Thompson.
11:00–12:00	Lecture: Pumping, Rural Lighting Plants.	F. L. Peterson.
1:00– 3:00	Practice: Judging Duroc Jersey Hogs.	J. I. Thompson.
3:00– 5:00	Practice: Soldering, Babbitt Pouring, Belt Lacing.	F. L. Peterson.
Oct. 17— 8:00–10:00	Practice: Farm Crops.	B. A. Madson.
10:00–12:00	Field Demonstration: Measurement of Water.	S. H. Beckett.

Oct. 19—	8:00–11:00	Lecture and Practice: Babcock Test for Butterfat in Cream, Skimmed Milk, etc. H. H. Douglass.
	11:00–12:00	Lecture: Mulches, Modifying Moisture Relations. C. F. Shaw.
	1:00– 3:00	Practice: Soils. Alfred Smith.
	3:00– 5:00	Lecture: Hog Cholera. F. M. Hayes.
Oct. 20—	8:00– 9:00	Lecture: Tree and Fruit Diseases. R. H. Taylor.
	9:00–10:00	Lecture: Water Requirements of Crops. B. A. Etcheverry.
	10:00–11:00	Lecture: Corn Culture. B. A. Madson.
	11:00–12:00	Lecture: Breeding Herd of Hogs. J. I. Thompson.
	1:00– 2:00	Lecture: A Self-Supporting Ranch. R. L. Adams.
	2:00– 4:00	Practice: Judging Berkshire Hogs. J. I. Thompson.
Oct. 21—	8:00– 9:00	Lecture: Tree and Fruit Insect Pests. R. H. Taylor.
	9:00–10:00	Lecture: Culture of Non-Saccharine Sorghums. B. A. Madson.
	10:00–11:00	Lecture: Principles of Draft, Wagon, Plow, etc. James Koeber.
	11:00–12:00	Lecture: Aeration, Soil Heat, Modifications. C. F. Shaw.
	1:00– 3:00	Practice: Soils. Alfred Smith.
	3:00– 5:00	Lecture and Clinic: Diseases of Hogs (Vaccination for Hog Cholera). F. M. Hayes.
Oct. 22—	8:00– 9:00	Lecture: Breeds of Dairy Cows. G. H. True.
	9:00–10:00	Lecture: Duty of Water. S. H. Beckett.
	10:00–11:00	Lecture: Rice Culture. B. A. Madson.
	11:00–12:00	Lecture: The Specialized Ranch. R. L. Adams.
	1:00– 3:00	Practice: Farm Management. R. L. Adams.
	3:00– 5:00	Practice: Judging Dairy Cows. G. H. True.
Oct. 23—	8:00–10:00	Practice: Cream Separators. H. H. Douglass.
	10:00–11:00	Lecture: Building the Dairy Herd. G. H. True.
	11:00–12:00	Lecture: Farm Implements and Machinery. James Koeber.
	1:00– 3:00	Practice: Judging Holstein Cows. G. H. True.
	3:00– 5:00	Practice: Examination and Discussion of Tillage Implements. James Koeber.
Oct. 24—	8:00–10:00	Practice: Field Crops. B. A. Madson.
	10:00–12:00	Practice: Preparation of Land for Irrigation. S. H. Beckett.
Oct. 26—	8:00– 9:00	Lecture: Nature and Properties of Milk and Dairy Products. H. H. Douglass.
	9:00–11:00	Practice: Testing Milk. H. H. Douglass.
	11:00–12:00	Lecture: Soil Chemistry. C. B. Lipman.
	1:00– 3:00	Practice: Soil Chemistry. Alfred Smith.
	3:00– 5:00	Clinic: Swine. F. M. Hayes.
Oct. 27—	8:00– 9:00	Lecture: Spraying. R. H. Taylor.
	9:00–10:00	Lecture: Methods of Irrigation and Conveying Water. S. T. Harding.
	10:00–11:00	Lecture: Potato Culture. B. A. Madson.
	11:00–12:00	Lecture: Feeding Dairy Cows. F. W. Woll.
	1:00– 2:00	Lecture: Marketing Farm Products. R. L. Adams.
	2:00– 4:00	Practice: Judging Guernsey Cows. G. H. True.

Oct. 28— 8:00– 9:00	Lecture: Pruning.	R. H. Taylor.
9:00–10:00	Lecture: Alfalfa Culture.	B. A. Madson.
10:00–11:00	Lecture: Traction Engines.	James Koeber.
11:00–12:00	Lecture: Soil Chemistry.	C. B. Lipman.
1:00– 3:00	Practice: Soil Chemistry.	Alfred Smith.
3:00– 5:00	Lecture and Clinic: Digestive Diseases of the Cow.	F. M. Hayes.
Oct. 29— 8:00– 9:00	Lecture: Feeding Dairy Cows.	F. W. Woll.
9:00–10:00	Lecture: Irrigation of Alfalfa.	S. H. Beckett.
10:00–11:00	Lecture: Alfalfa Culture.	B. A. Madson.
11:00–12:00	Lecture: Cost of Product; Profit and Loss.	R. L. Adams.
1:00– 3:00	Practice: Farm Management.	R. L. Adams.
3:00– 5:00	Practice: Judging Jersey Cows.	G. H. True.
Oct. 30— 8:00–10:00	Practice: Handling Market Milk.	H. H. Douglass.
10:00–11:00	Lecture: Calf Feeding.	F. W. Woll.
11:00–12:00	Lecture: Petroleum Products, Fuel, and Fuel Oil.	James Koeber.
1:00– 3:00	Practice: Judging Dairy Heifers.	G. H. True.
3:00– 5:00	Practice: Examination and Discussion of Manure Spreaders and Mowers.	James Koeber.
Oct. 31— 8:00–10:00	Practice: Farm Crops.	B. A. Madson.
10:00–12:00	Practice: Irrigation of Field Crops.	S. H. Beckett.
Nov. 2— 8:00– 9:00	Lecture: Market Milk Problems.	H. H. Douglass.
9:00–11:00	Practice: Milk Testing Laboratory.	H. H. Douglass.
11:00–12:00	Lecture: Soil Chemistry	C. B. Lipman.
1:00– 3:00	Practice: Soil Chemistry.	Alfred Smith.
3:00– 5:00	Lecture and Practice: Contagious Abortion in Cattle.	F. M. Hayes.
Nov. 3— 8:00– 9:00	Lecture: Pruning.	R. H. Taylor.
9:00–10:00	Lecture: Irrigation of Orchards.	B. A. Etcheverry.
10:00–11:00	Lecture: Alfalfa Culture.	B. A. Madson.
11:00–12:00	Lecture: Testing Dairy Cows for Advanced Registry.	F. W. Woll.
1:00– 2:00	Lecture: Farm Labor.	R. L. Adams.
2:00– 4:00	Practice: Judging Dairy Bulls.	G. H. True.
Nov. 4— 8:00– 9:00	Lecture: Grafting Trees.	R. H. Taylor.
9:00–10:00	Lecture: Annual Hay Crop.	B. A. Madson.
10:00–11:00	Lecture: Use of the Steel Square.	H. L. Belton.
11:00–12:00	Lecture: Soil Bacteriology.	C. B. Lipman.
1:00– 3:00	Practice: Soil Bacteriology.	Alfred Smith.
3:00– 5:00	Lecture and Clinic: Black Leg, Anthrax and Actinomycosis (Lumpy Jaw).	F. M. Hayes.
Nov. 5— 8:00– 9:00	Lecture: Breeds of Sheep.	G. H. True.
9:00–10:00	Lecture: Irrigation of Orchards.	B. A. Etcheverry.
10:00–11:00	Lecture: Annual Leguminous Crops.	B. A. Madson.
11:00–12:00	Lecture: Farm Accounts. Use of Cost Data.	R. L. Adams.
1:00– 3:00	Practice: Farm Management.	R. L. Adams.
3:00– 5:00	Practice: Judging Mutton Sheep.	G. H. True.

Nov. 6—	8:00–10:00	Practice: Cream Separators. H. H. Douglass.
	10:00–11:00	Lecture: The Fine Wool Sheep in California. G. H. True.
	11:00–12:00	Lecture: Factors Concerned in Constructing Buildings. H. L. Belton.
	1:00– 3:00	Practice: Judging Fine Wool Sheep. G. H. True.
	3:00– 5:00	Practice: Cutting Model Rafters, etc. H. L. Belton.
Nov. 7—	8:00–10:00	Practice: Farm Crops. B. A. Madson.
	10:00–12:00	Practice: Construction and Use of Concrete Pipe Lines. S. H. Beckett.



Students learn to know seeds and their quality by studying them in the laboratory and by making germination tests.

Nov. 9—	8:00– 9:00	Lecture: Dairy Market Features. H. H. Douglass.
	9:00–11:00	Practice: Testing Laboratory. H. H. Douglass.
	11:00–12:00	Lecture: Soil Bacteriology. C. B. Lipman.
	1:00– 3:00	Practice: Soil Bacteriology. Alfred Smith.
	3:00– 5:00	Lecture and Demonstration: Tuberculosis in Cattle. F. M. Hayes.
Nov.10—	8:00– 9:00	Lecture: Orchard Fertilization, Green Manure, Intercropping, etc. R. H. Taylor.
	9:00–10:00	Lecture: Pumping Plants for Irrigation. B. A. Etcheverry.

Nov. 10—	10:00–11:00	Lecture: Fodder and Silage Crops. B. A. Madson.
	11:00–12:00	Lecture: The Draft Horse in California. J. I. Thompson.
	1:00– 2:00	Lecture Renting and Leasing Land; Selling Service, Hiring Men, Loans, etc. R. L. Adams.
	2:00– 5:00	Demonstration: Slaughter Test. G. H. True.
Nov. 11—	8:00– 9:00	Lecture: Small Fruits; General Considerations. R. H. Taylor.
	9:00–10:00	Lecture: Root and Soiling Crops. B. A. Madson.
	10:00–11:00	Lecture: The Use of the Forge. R. C. Ingrim.
	11:00–12:00	Lecture: Bacteria of the Soil. C. B. Lipman.
	1:00– 3:00	Practice: Bacteria of the Soil. Alfred Smith.
	3:00– 5:00	Demonstration: Slaughter and Post mortem Examination of Cow Previously Tested with Tuberculin. F. M. Hayes.
Nov. 12—	8:00– 9:00	Lecture: Care and Keeping of Work Stock. J. I. Thompson.
	9:00–10:00	Lecture: Pumping Plants for Irrigation. B. A. Etcheverry.
	10:00–11:00	Lecture: Crop Rotation. B. A. Madson.
	11:00–12:00	Lecture: Farm Law. R. L. Adams.
	1:00– 3:00	Practice: Farm Management. R. L. Adams.
	3:00– 5:00	Practice: Judging Draft Horses. J. I. Thompson.
Nov. 13—	8:00–10:00	Practice: Cream Separators. H. H. Douglass.
	10:00–11:00	Lecture: Care of Brood Mares and Colts. J. I. Thompson.
	11:00–12:00	Lecture: Welding and Tempering. R. C. Ingrim.
	1:00– 3:00	Practice: Judging Mules. J. I. Thompson.
	3:00– 5:00	Practice: Forge and Welding. R. C. Ingrim.
Nov. 14—	8:00–10:00	Practice: Farm Crops. B. A. Madson.
	10:00–12:00	Demonstration: Inspection of Irrigation System of the Farm. S. H. Beckett.

The size of the wheat plant and quality of grain are modified by soil and climate.

DAIRY MANUFACTURES SHORT COURSE

OCTOBER 5 TO NOVEMBER 14, 1914

The Dairy Manufactures Short Course is designed to meet the needs of those actively engaged in the manufacture of dairy products. The more practical phases of buttermaking, cheesemaking, and ice cream making are taken up as completely as the time affords. The course includes lectures upon the secretion, composition and handling of milk, the operation of the Babcock test and other commercial tests, dairy bacteriology, lectures and practice on separation, pasteurization and ripening of cream, production and use of starters, churning and moisture control in butter, manufacture of California and Cheddar types of cheese, scoring dairy products, ice cream making, creamery accounting, creamery management, and dairy mechanics. It has been arranged that part of the course shall consist of subjects which are of interest and importance to manufacturers as well as producers, and a limited amount of attention will be given to dairy cattle, hogs, alfalfa, and irrigation.

Practice in belt-lacing is one of the many branches of Short Course work.

Many of the creamery operators in the United States have taken a course in Dairy Manufactures at some dairy

school. Under the present conditions no man can expect to become competent to operate a creamery without taking such a course or by serving an apprenticeship under a man who has the technical information which the course in Dairy Manufactures gives. The supply of competent men to operate creameries is not equal to the demand. Even men who have a fairly good practical knowledge of creamery or cheesemaking operations will find this six weeks' course a great help to them in increasing their efficiency.

1914 DAIRY MANUFACTURES SHORT COURSE

OCTOBER 5 TO NOVEMBER 14.

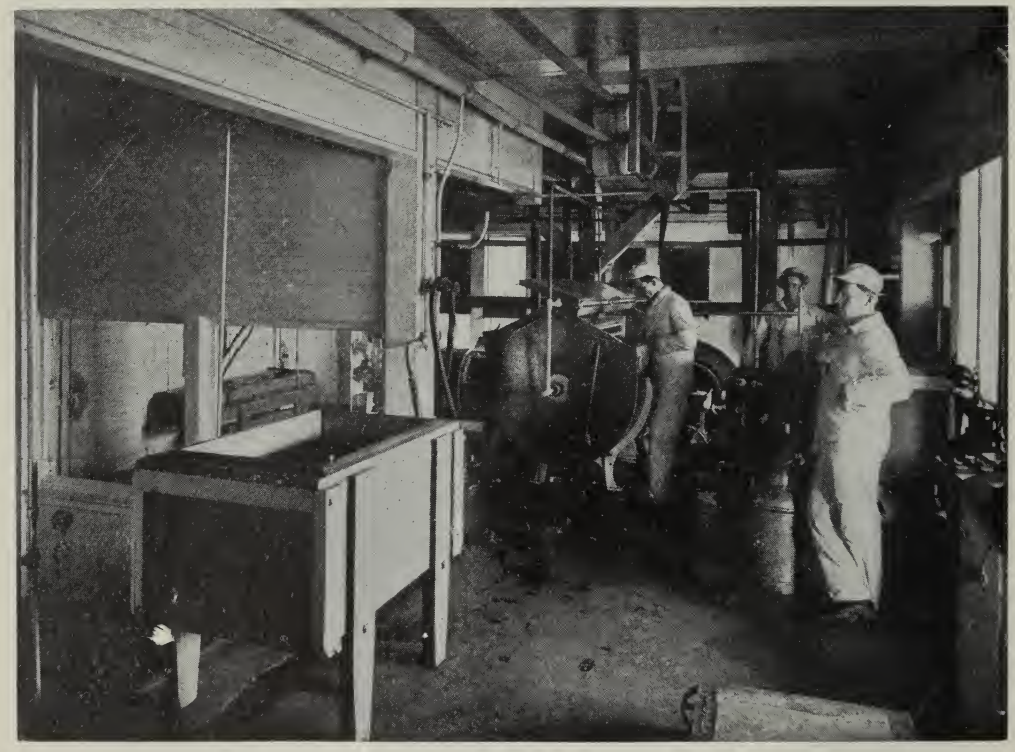
Oct. 5—	1:00– 2:00	Lecture: Introductory.	L. M. Davis.
	3:00– 5:00	Practice: Testing Laboratory.	H. S. Baird.
Oct. 6—	8:00– 9:00	Lecture: Composition and Secretion of Milk.	L. M. Davis.
	9:00–10:00	Lecture: Milk for Cheese Making.	H. S. Baird.
	10:00–12:00	Practice: Creamery.	H. H. Douglass and ——.
	1:00– 5:00	Practice: Creamery.	H. H. Douglass and ——.
Oct. 7—	8:00– 9:00	Lecture: Babcock Test for Butterfat in Milk.	L. M. Davis.
	9:00–10:00	Lecture: Ice Cream Industry; Importance and Opportunities.	H. S. Baird.
	10:00–11:00	Lecture: Gasoline Engines.	F. L. Peterson.
	11:00– 5:00	Practice: Cheesemaking.	H. S. Baird and ——.
Oct. 8—	8:00– 9:00	Lecture: Babcock Test for Cream and other Dairy Products.	L. M. Davis.
	9:00–10:00	Lecture: Scoring Butter.	L. M. Davis.
	10:00–12:00	Lecture: Nature and Habits of Bacteria.	F. M. Hayes.
	1:00– 5:00	Practice: Creamery.	H. H. Douglass and ——.
Oct. 9—	8:00– 9:00	Lecture: Application of the Babcock Test.	L. M. Davis.
	9:00–10:00	Lecture: Methods of Making California Cheese.	H. S. Baird.
	10:00–11:00	Lecture: Creamery Management.	H. H. Douglass.
	11:00–12:00	Lecture: Gas Engine Ignition and Valve Grinding.	F. L. Peterson.
	1:00– 3:00	Practice: Testing Laboratory.	H. S. Baird,
	3:00– 5:00	Practice: Dairy Mechanics; Gasoline Engines.	F. L. Peterson,
Oct. 10—	8:00–10:00	Practice: Ice Cream Making.	H. S. Baird,
	10:00–12:00	Practice: Creamery.	H. H. Douglass and ——.
	1:00– 5:00	Practice: Creamery.	H. H. Douglass and ——.

Oct. 12—	8:00– 9:00	Lecture: Methods and Value of Testing Milk and Cream for Acidity. L. M. Davis.
	9:00–10:00	Lecture: Handling and Standardizing Cream for Ice Cream Making. H. S. Baird.
	10:00–12:00	Practice: Creamery. H. H. Douglass and ——.
	1:00– 5:00	Practice: Creamery. H. H. Douglass and ——.
Oct. 13—	8:00– 9:00	Lecture: Use of the Lactometer. L. M. Davis.
	9:00–10:00	Lecture: Selection of an Irrigated Farm. S. H. Beckett.
	10:00–11:00	Lecture: Method of Making Cheddar Cheese. H. S. Baird.
	10:00–12:00	Lecture: Breeds of Hogs. J. I. Thompson.
	1:00– 2:00	Lecture: Scoring Butter. L. M. Davis.
	2:00– 4:00	Practice: Judging Hogs. J. I. Thompson.

Classes in Dairying.

Oct. 14—	8:00–10:00	Practice: Testing Laboratory. H. S. Baird.
	10:00–11:00	Lecture: Electricity and Motors. F. L. Peterson.
	11:00– 5:00	Practice: Cheesemaking. H. S. Baird and ——.
Oct. 15—	8:00– 9:00	Lecture: Care of Brood Sows and Pigs. J. I. Thompson.
	9:00–10:00	Lecture: Methods and Importance of Testing Butter for Moisture. L. M. Davis.
	10:00–12:00	Practice: Sources of Contamination in Milk and Cream. F. M. Hayes.
	1:00– 3:00	Practice: Testing Laboratory. H. S. Baird.
	3:00– 5:00	Practice: Judging Hogs. J. I. Thompson.

Oct. 16—	8:00– 9:00	Lecture: Methods of Testing Butter for Salt Content. L. M. Davis.
	9:00–10:00	Lecture: Constituents Used in Making Ice Cream. H. S. Baird.
	10:00–11:00	Lecture: Growing Pigs for Market. J. I. Thompson.
	11:00–12:00	Lecture: Creamery Management. H. H. Douglass.
	1:00– 3:00	Practice: Judging Hogs. J. I. Thompson.
	3:00– 5:00	Practice: Dairy Mechanics; Soldering, Belt Lacing, Babbitt Pouring, Shaft Hanging. F. L. Peterson.
Oct. 17—	8:00–10:00	Practice: Ice Cream Making. H. S. Baird.
	10:00–12:00	Practice: Measuring Irrigation Water. S. H. Beckett.
	1:00– 5:00	Practice: Creamery. H. H. Douglass and ——.

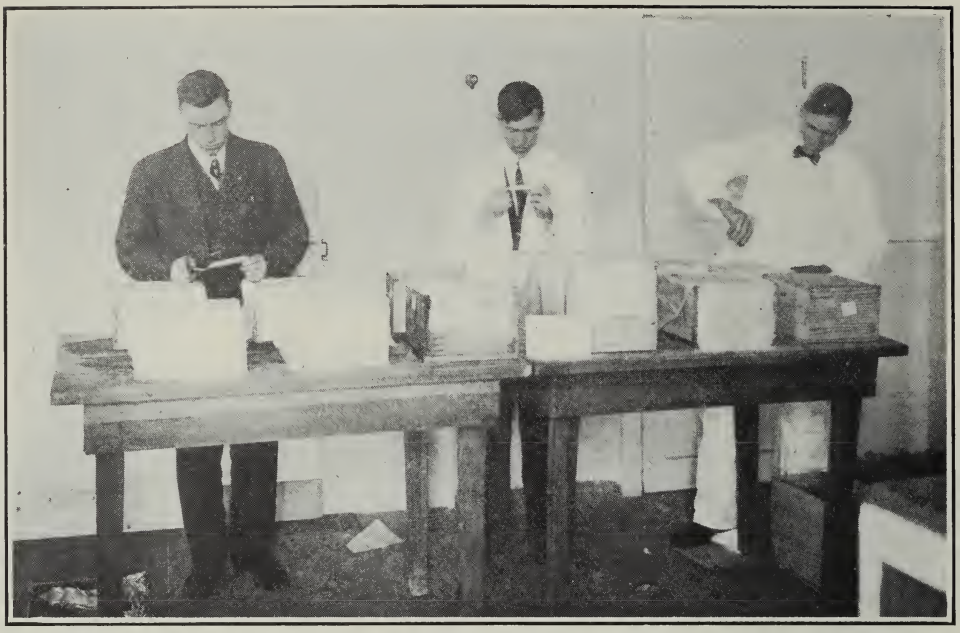


Pasteurizing and ripening cream.

Oct. 19—	8:00– 9:00	Lecture: Tests Used in Cheesemaking. L. M. Davis.
	9:00–10:00	Lecture: Making Soft Cheese of Different Types. H. S. Baird.
	10:00–12:00	Practice: Creamery. H. H. Douglass and ——.
	1:00– 5:00	Practice: Creamery. H. H. Douglass and ——.

Oct. 20—	8:00–11:00	Practice: Testing Laboratory.	H. S. Baird.
	11:00–12:00	Lecture: Breeding Hogs.	J. I. Thompson.
	1:00– 2:00	Lecture: Creamery Management.	H. H. Douglass.
	2:00– 4:00	Practice: Judging Hogs.	J. I. Thompson.
Oct. 21—	8:00– 9:00	Lecture: Tests for Preservatives, Sediment, etc. in Milk.	L. M. Davis.
	9:00–10:00	Lecture: Methods and Principles of Ice Cream Making.	H. S. Baird.
	10:00– 5:00	Practice: Cheesemaking.	H. S. Baird and ——.
Oct. 22—	8:00– 9:00	Lecture: Breeds of Dairy Cows.	G. H. True.
	9:00–10:00	Lecture: The Grading of Cream.	L. M. Davis.
	10:00–12:00	Lecture: Abnormal Fermentations in Milk.	F. M. Hayes.
	1:00– 3:00	Practice: Testing Laboratory.	H. S. Baird.
	3:00– 5:00	Practice: Judging Dairy Cows.	G. H. True.
Oct. 23—	8:00– 9:00	Lecture: Creamery Co-operation.	L. M. Davis.
	9:00–10:00	Lecture: The Curing of Cheese.	H. S. Baird.
	10:00–11:00	Lecture: Building Up the Dairy Herd.	G. H. True.
	11:00–12:00	Lecture: Tillage Implements.	James Koeber.
	1:00– 3:00	Practice: Judging Dairy Cows.	G. H. True.
	3:00– 5:00	Practice: Dairy Mechanics.	James Koeber.
Oct. 24—	8:00–10:00	Practice: Ice Cream Making.	H. S. Baird.
	10:00–12:00	Practice: Preparation of Land for Irrigation.	S. H. Beckett.
	1:00– 5:00	Practice: Creamery.	H. H. Douglass and ——.

Oct. 26—	8:00– 9:00	Lecture: The Use of Cream Separators.	L. M. Davis.
	9:00–10:00	Lecture: Fancy Ice Cream, Ices, and Sherbets.	H. S. Baird.
	10:00–12:00	Practice: Creamery.	H. H. Douglass and ——.
	1:00– 5:00	Practice: Creamery.	H. H. Douglass and ——.
Oct. 27—	8:00– 9:00	Lecture: Preparation and Use of Starter for Buttermaking.	L. M. Davis.
	9:00–10:00	Lecture: Methods of Irrigation.	S. T. Harding.
	10:00–11:00	Lecture: Creamery Management.	H. H. Douglass.
	11:00–12:00	Lecture: Feeding Dairy Cows.	F. W. Woll.
	1:00– 2:00	Lecture: Scoring Cheese.	H. S. Baird.
	2:00– 4:00	Practice: Judging Dairy Cows.	G. H. True.
Oct. 28—	8:00– 9:00	Lecture: Pasteurization of Cream for Buttermaking.	L. M. Davis.
	9:00–10:00	Lecture: Alfalfa Culture.	B. A. Madson.
	10:00– 5:00	Practice: Cheesemaking.	H. S. Baird and ——.
Oct. 29—	8:00– 9:00	Lecture: Feeding Dairy Cows.	F. W. Woll.
	9:00–10:00	Lecture: Irrigation of Alfalfa.	S. H. Beckett.
	10:00–11:00	Lecture: Alfalfa Culture.	B. A. Madson.
	11:00–12:00	Lecture: Milk as a Carrier of Disease.	F. M. Hayes.
	1:00– 3:00	Practice: Testing Laboratory.	H. S. Baird.
	3:00– 5:00	Practice: Judging Dairy Cows.	G. H. True.



Scoring butter submitted by various buttermakers in California.

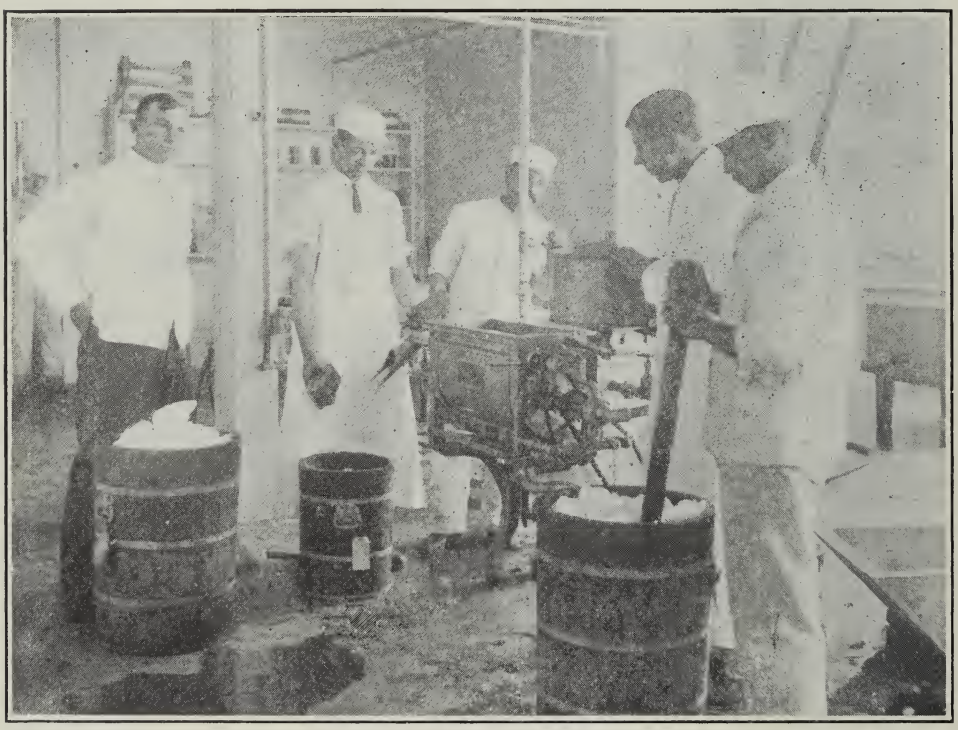
Oct. 30—	8:00– 9:00	Lecture: Ripening of Cream for Butter-making. L. M. Davis.
	9:00–10:00	Lecture: Defects Commonly Found in Cheese. H. S. Baird.
	10:00–11:00	Lecture: Feeding Dairy Calves. F. W. Woll.
	11:00–12:00	Lecture: Fuels, Oils, etc. James Koeber.
	1:00– 3:00	Practice: Judging Dairy Heifers. G. H. True.
	3:00– 5:00	Practice: Dairy Mechanics. James Koeber.
Oct. 31—	8:00–10:00	Practice: Ice Cream Making. H. S. Baird.
	10:00–12:00	Practice: Testing Laboratory. H. S. Baird.
	1:00– 5:00	Practice: Creamery. H. H. Douglass and ——.

Nov. 2—	8:00– 9:00	Lecture: Churning Cream. L. M. Davis
	9:00–10:00	Lecture: Hardening and Holding Ice Cream. H. S. Baird and ——.
	10:00–12:00	Practice: Creamery. H. H. Douglass.
	1:00– 5:00	Practice: Creamery. H. H. Douglass and ——.
Nov. 3—	8:00– 9:00	Lecture: Washing, Salting, and Working Butter. L. M. Davis.
	9:00–10:00	Lecture: Creamery Management. H. H. Douglass.
	10:00–11:00	Lecture: Alfalfa Culture. B. A. Madson.
	11:00:12:00	Lecture: Advanced Registry for Dairy Stock. F. W. Woll.
	1:00– 2:00	Lecture: Scoring Butter. L. M. Davis.
	2:00– 4:00	Practice: Judging Dairy Bulls. G. H. True.

Matting the curd in cheesemaking.

Nov. 4—	8:00–10:00	Practice: Testing Laboratory. L. M. Davis, H. S. Baird, H. H. Douglass.
	10:00–11:00	Lecture: Use of the Steel Square. H. L. Belton.
	11:00– 5:00	Practice: Cheesemaking. H. S. Baird and ——.
Nov. 5—	8:00– 9:00	Lecture: Moisture Control in Butter. L. M. Davis.
	9:00–10:00	Lecture: Market Grades of Cheese. H. S. Baird.
	10:00–12:00	Practice: Effect of Pasteurization Upon Bacteria in Milk. F. M. Hayes.
	1:00– 5:00	Practice: Creamery. H. H. Douglass and ——.
Nov. 6—	8:00– 9:00	Lecture: Packing Butter for Market. L. M. Davis.
	9:00–10:00	Lecture: Types of Ice Cream Freezers. H. S. Baird.
	10:00–11:00	Lecture: Scoring Cheese. H. S. Baird.
	11:00–12:00	Lecture: Building Construction. H. L. Belton.
	1:00– 3:00	Practice: Testing Laboratory. H. S. Baird.
	3:00– 5:00	Practice: Dairy Mechanics; Cutting Rafters. H. L. Belton.
Nov. 7—	8:00–12:00	Practice: Fancy Ice Cream Making. H. S. Baird.
	1:00– 5:00	Practice: Creamery H. H. Douglass and ——.
Nov. 9—	8:00– 9:00	Lecture: Marketing Butter. L. M. Davis.
	9:00–10:00	Lecture: Classification of Ice Cream and Other Frozen Products. H. S. Baird and ——.
	10:00–12:00	Practice: Creamery. H. H. Douglass.
	1:00– 5:00	Practice: Creamery. H. H. Douglass and ——.

Nov.10-- 8:00– 9:00	Lecture: Market Grades of Butter.	L. M. Davis.
9:00–12:00	Practice: Testing Laboratory.	H. S. Baird.
1:00– 5:00	Practice: Creamery.	H. H. Douglass and ——.
Nov.11— 8:00– 9:00	Lecture: Mechanical Refrigeration.	L. M. Davis.
9:00–10:00	Lecture: Cheese.	H. S. Baird.
10:00–11:00	Lecture: Use of the Forge.	R. C. Ingrim.
11:00– 5:00	Practice: Cheesemaking.	H. S. Baird and ——.
Nov.12— 8:00– 9:00	Lecture: Mechanical Refrigeration.	L. M. Davis.
9:00–10:00	Lecture: Scoring Butter.	L. M. Davis.
10:00–12:00	Lecture: Value of Bacterial Standards in Milk Production.	F. M. Hayes.
1:00– 5:00	Practice: Testing Laboratory.	H. S. Baird.



Freezing and packing ice cream.

Nov.13— 8:00– 9:00	Lecture: Butter.	L. M. Davis.
9:00–10:00	Lecture: Ice Cream Factory Management.	H. S. Baird.
10:00–11:00	Lecture: Creamery Management.	H. H. Douglass.
11:00–12:00	Lecture: Welding.	R. C. Ingrim.
1:00– 3:00	Practice: Testing Laboratory.	H. S. Baird.
3:00– 5:00	Practice: Dairy Mechanics; Forging.	R. C. Ingrim.
Nov.14— 8:00–10:00	Practice: Ice Cream Making.	H. S. Baird and ——.
10:00–12:00	Practice: Creamery.	H. H. Douglass.
1:00– 5:00	Practice: Creamery.	H. H. Douglass and ——.

THE SHORT COURSE IN HORTICULTURE

October 5 to November 14, 1914

All orchard trees at the University Farm are budded nursery stock.

The short course in Horticulture is of definite value to the practical man in that it is designed to give him a broad outlook on cultural methods as they are practiced in other sections, as well as his own. Of greater importance to such a man is the fact that the work dwells upon the underlying principles on which the various methods of tillage, tree or vine training and pest control are based. The grower leaves the course with a knowledge of the reasons for the different practices, and with this as a thinking basis he can adjust his operations to fit his individual conditions. This means an understanding of the structure and properties of the soil, the conditions which make it fertile and how this fertility can best be maintained. The study of budding and grafting will make it possible for the grower to produce and modify his own plants as he may desire. The principles of fruit-tree growth will be presented to enable him to adjust his pruning method to the habit of the different types, rather than by rule. The consideration of the properties of the various insecticides and fungicides and the character of the various pests will assist in avoiding costly mistakes, by selection of wrong material and incorrect methods of application. The principles of fruit handling and marketing will give the grower the proper perspective of the relation between production and marketing.

These, with other topics which will be considered, will have definite value in training the grower for a more intelligent reading of agricultural literature. This means power to select that which is good. It means progressive fruit growing and a more attractive occupation. No small feature will be the opportunity to meet and exchange views with men from other sections with similar problems.

Lessons and practice in pruning are given at the University Farm, Davis.

Commercial fruit raising has been brought to a perfection in California which is altogether unique. This requires for its success an unusual amount of technical knowledge. This technical knowledge the short course in Horticulture seeks to supply in as great a measure as a period of six weeks permits. The various kinds of fruits, the soil and climate to which each is adapted, and the special method of handling each, including the cultivation of the soil, methods of budding, grafting, and pruning, and the methods of packing and handling all receive detailed discussion. Special attention is given to irrigation, to plant diseases and insect enemies. Actual practice is given in spraying and other methods of controlling insect enemies and fungous diseases.

To get a full understanding of the short course in Horticulture, examine the schedule of studies between pages 29 and 43.

The first three weeks of the short course in Horticulture will be devoted to a consideration of topics fundamental to all branches of the subject. This work will include a thorough study of the fundamental principles of plant propagation and nursery methods, the pruning of fruit plants and the selection and preparation of lands for fruit plantations. Attention will be given to the basic features of successful marketing. This will involve studies in fruit handling, precooling and storage, together with a consideration of the essentials of co-operation and marketing methods and agencies. This work will be accompanied by practice work in common nursery methods, budding, grafting, and top-working.

The ultimate profit of a vineyard depends in great measure on the proper treatment of the young vines.

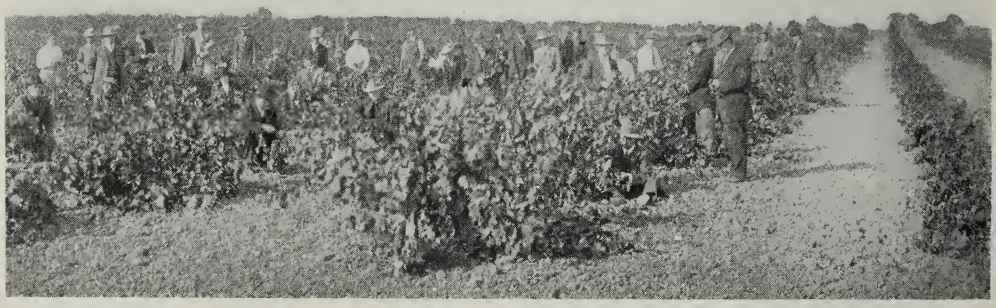
The third week will be largely devoted to the underlying principles of pests and their control. This will include studies of the types of insects and plant diseases which must be combatted by the fruit-grower and the methods used. Throughout the course a portion of the time will be given to studies of soils, irrigation, farm management, and farm machinery—topics of fundamental importance in all branches of agriculture.

The work of the fourth, fifth and sixth weeks of the horticultural course will be divided in such a way that the student may secure detailed instruction concerning the type of fruits in which he is most interested. The three subdivisions: deciduous fruits, citrus and semi-tropical fruits, and viticulture are discussed below:

Deciduous Fruits.—This course is designed to give the student instruction in the best cultural practices and the special require-

ments of deciduous fruits, including nuts. This work will involve studies of such questions as methods of propagation and root-stocks used, special methods required in pruning and tillage, the value and adaptation of varieties. Attention will be given to the insects and diseases of each type of fruit and the best methods of control. The following fruits will be considered: Apple, pear, cherry, plum and prune, apricot, peach, almond, walnut. In addition brief discussion of bush fruits and strawberries will be included.

Practice work will be given in tree planting, pruning and the preparation and application of spray materials.



Class in viticulture.

Citrus and Semi-Tropical Fruits.—This course is designed to cover the planting and general care of citrus and other semi-tropical fruit orchards in California. The topics discussed will deal with the fundamentals for success in raising citrus fruits and the chief reasons why many orchards fail to pay. There will be an exposition of the best modern practice in propagation, planting, cultivation, irrigation, fertilization, orchard heating, and the handling of the fruit. The insects and diseases affecting these crops will be discussed and the most economical and effective control measures indicated.

During recent years many new semi-tropical fruits are being cultivated on a commercial scale. Specimens of the fruit, foliage,

and flowers of these will be exhibited, and the details of culture and outlook of profit discussed.

The culture of the date and avocado is rapidly assuming commercial proportions in California. A sketch of these industries will be given, together with an opportunity for free discussion. Lists of bulletins and other literature on the fruits treated will be distributed to aid the student in continuing his studies at home.

The lectures will be accompanied by practice and demonstrations wherever practicable to introduce such work.

Viticulture.—In this course special methods useful to grape growers will be considered. Particular attention will be given to those parts of the subject which beginners should understand in order to avoid the common mistakes to which failure is often due, and modern methods used by successful vineyardists will be explained and illustrated.

Field demonstrations will be made as complete as is practicable at this season, illustrating nursery work, grafting, planting, sulphuring, and the control of phylloxera.

Olive Culture.—A portion of the course will be devoted to olive culture. This part of the course will consider the choice of location and olive varieties; the causes of former failures and of present successes in the industry. The methods of the best growers will be described and suggestions made for improvement.

The making of pickles will be described and demonstrated as fully as possible at this season.

SCHEDULE OF THE SHORT COURSE IN HORTICULTURE

OCTOBER 5 TO NOVEMBER 14, 1914

Oct. 5—	9:00–10:00	Lecture: The Handling of Seeds, Propagation by Separation, Division, Layers and Cuttings. A. H. Hendrickson.
	11:00–12:00	Lecture: Origin and Formation of Soils. C. F. Shaw.
	1:00– 3:00	Practice: Soils. Alfred Smith.
	3:00– 5:00	Practice: Handling Seeds and Making Different Kinds of Cuttings. A. H. Hendrickson.

Oct. 6—	9:00–10:00	Lecture: Irrigation Resources and Conditions in California. Frank Adams.
	10:00–11:00	Lecture: Ornamentation of the Country Home Grounds. J. W. Gregg.
	1:00– 2:00	Lecture: What Farm Management Is and Its Scope; Qualification of a Good Farm Manager, Present Application of Farm Management to California Conditions. R. L. Adams.
	2:00– 3:00	Lecture: Plant Materials. A Discussion of the Most Common Plants that May Be Used for Country Home Decoration. R. T. Stevens.
	3:00– 5:00	Practice: Propagating Plants by Separation, Division, and Layering. A. H. Hendrickson.
Oct. 7—	9:00–10:00	Lecture: Methods of Budding and Grafting. A. H. Hendrickson.
	10:00–11:00	Lecture: Gas Engines. F. L. Peterson.
	11:00–12:00	Lecture: Origin and Formation of Soils. C. F. Shaw.
	1:00– 3:00	Practice: Soils. Alfred Smith.
	3:00– 5:00	Practice: Budding Fruit Trees of Different Kinds. A. H. Hendrickson.
Oct. 8—	9:00–10:00	Lecture: Irrigation Laws and Organizations of Water Companies. Frank Adams.
	10:00–11:00	Lecture: California as a Fruit Producing State. E. J. Wickson.
	11:00–12:00	Lecture: How Farm Management Covers the Choice of a Ranch, Layout of Fields, Equipment, Capital, etc. R. L. Adams.
	1:00– 3:00	Practice: Farm Management. R. L. Adams.
	3:00– 4:00	Lecture: Fruit Growing in California. E. J. Wickson.
Oct. 9—	9:00–10:00	Lecture: California as a Vegetable Growing State. E. J. Wickson.
	11:00–12:00	Lecture: Valve Grinding, Ignition, Adjustment. F. L. Peterson.
	1:00– 2:00	Lecture: The Rancher's Home Garden. E. J. Wickson.
	3:00– 5:00	Practice: Handling Gas Engines. F. L. Peterson.
Oct. 10—	10:00–12:00	Practice: Soil Moisture and Its Relation to Plant Growth. O. W. Israelson.

Oct. 12—	9:00–10:00	Lecture: Nursery Management. A. H. Hendrickson.
	11:00–12:00	Lecture: Soil—Texture, Structure, and Humus. C. F. Shaw.
	1:00– 3:00	Practice: Soils. Alfred Smith.
	3:00– 5:00	Practice: Grafting Trees. A. H. Hendrickson.

Oct. 13—	9:00–10:00	Lecture: Selection of an Irrigated Farm and Sources of Water Supply. S. H. Beckett
	10:00–11:00	Lecture: Handling of Fruit for Transportation. B. B. Pratt.
	1:00– 2:00	Lecture: Planning the Farm Work, Rotations, Cropping Systems, etc. R. L. Adams.
	2:00– 3:00	Lecture: Locating an Orchard, Climate Topography, Soil and Rainfall in Relation to the Selection of Orchard Sites. R. H. Taylor.
	3:00– 5:00	Practice: Budding and Grafting. A. H. Hendrickson.
Oct. 14—	9:00–10:00	Lecture: Principles of Pruning. A. H. Hendrickson.
	10:00–11:00	Lecture: Electricity, Electric Motors, etc. F. L. Peterson.
	11:00–12:00	Lecture: Soil Moisture-Forms, Amounts, Movements. C. F. Shaw.
	1:00– 3:00	Practice: Soils. Alfred Smith.
	3:00– 5:00	Practice: Top-working and the Preparation of Grafting Wax. A. H. Hendrickson.
Oct. 15—	9:00–10:00	Lecture: Units of Measurement and Methods of Measuring Water. S. H. Beckett.
	10:00–11:00	Lecture: Pre-cooling and Storage; Principles and Methods. B. B. Pratt.
	11:00–12:00	Lecture: Economizing and Eliminating Waste. R. L. Adams.
	1:00– 3:00	Practice: Farm Management. R. L. Adams.
	3:00– 4:00	Lecture: Preparation of Land for Planting. R. H. Taylor.
Oct. 16—	9:00–10:00	Lecture: Essentials of Co-operation for Fruit Marketing. B. B. Pratt.
	11:00–12:00	Lecture: Pumping, Rural Lighting Plants. F. L. Peterson.
	3:00– 5:00	Practice: Soldering, Babbitt Pouring, Belt Lacing. F. L. Peterson.
Oct. 17—	9:00–10:00	Lecture: Marketing Methods and Agencies. B. B. Pratt.
	10:00–12:00	Field Demonstration: Measurement of Water. S. H. Beckett.

Oct. 19—	9:00–10:00	Lecture: The Nature of Plant Diseases. S. S. Rogers.
	10:00–11:00	Lecture: Insect Pests; How They Live, Multiply, and Cause Injury to Fruit Plants. H. J. Quayle.
	11:00–12:00	Lecture: Mulches, Modifying Moisture Relations. C. F. Shaw.
	1:00– 3:00	Practice: Soils. Alfred Smith.
	3:00– 5:00	Practice: Exposition of Specimens of Different Kinds of Insect Pests Common in California With Practice in Identification. H. J. Quayle.

Oct. 20—	9:00–10:00	Lecture: Water Requirements of Crops. B. A. Etcheverry.
	10:00–11:00	Lecture: Insect Pests; Control by the Use of Stomach Poisons; Codling Moth Control. H. J. Quayle.
	1:00– 2:00	Lecture: A Self-supporting Ranch. R. L. Adams.
	2:00– 4:00	Practice: Study of California Insect Pests. H. J. Quayle.
	4:00– 5:00	Lecture: Insect Pests; Control by the Use of Contact Sprays and Gases; Citrus Fumigation. H. J. Quayle.
Oct. 21—	8:00– 9:00	Lecture: Plant Diseases Caused by Fungi. S. S. Rogers.
	9:00–10:00	Lecture: Insect Pests; Control by the Use of Predaceous Insects and Parasites. H. J. Quayle.
	10:00–11:00	Lecture: Principles of Draft, Wagon Plow, etc. James Koeber.
	11:00–12:00	Lecture: Aeration, Soil Heat, Modifications. C. F. Shaw.
	1:00– 3:00	Practice: Soils. Alfred Smith.
	3:00– 5:00	Practice: Study of Fruit Tree Diseases. S. S. Rogers.

Students studying the effect of water percolation under field conditions.

Oct. 22— 9:00–10:00	Lecture: Duty of Water.	S. H. Beckett.
10:00–11:00	Lecture: Plant Diseases Caused by Fungi.	S. S. Rogers.
11:00–12:00	Lecture: The Specialized Ranch.	R. L. Adams.
1:00– 3:00	Practice: Farm Management.	R. L. Adams.
Oct. 23— 9:00–10:00	Lecture: Plant Diseases Caused by Bacteria.	S. S. Rogers.
11:00–12:00	Lecture: Farm Implements and Machinery.	James Koeber.
1:00– 3:00	Practice: Study of Vegetable and Cereal Diseases.	S. S. Rogers
3:00– 5:00	Practice: Examination and Discussion of Tillage implements.	James Koeber.
Oct. 24— 9:00–10:00	Lecture: Plant Diseases Caused by Nematode Worms and other Agencies.	S. S. Rogers.
10:00–12:00	Practice: Preparation of Land for Irrigation.	S. H. Beckett.

Students in the horticultural courses will specialize during the fourth, fifth, and sixth weeks, in the type of fruits in which they are most interested, taking their work in one of the three following sections:

DECIDUOUS FRUITS

Oct. 26— 8:00– 9:00	Lecture: Pruning Young Trees.	R. H. Taylor.
10:00–11:00	Lecture: Pruning Old Trees. The Thinning of Fruit.	R. H. Taylor.
11:00–12:00	Lecture: Soil Chemistry.	C. B. Lipman.
1:00– 3:00	Practice: Soil Chemistry.	Alfred Smith.
3:00– 5:00	Practice: Demonstration and Practice in Tree Planting.	R. H. Taylor.
Oct. 27— 9:00–10:00	Lecture: Methods of Irrigation and Conveying Water.	S. T. Harding.
10:00–11:00	Lecture: Planning and Planting the Orchard.	R. H. Taylor.
1:00– 2:00	Lecture: Marketing Farm Products.	R. L. Adams.
2:00– 4:00	Practice: Study of Nursery Stock.	R. H. Taylor.
Oct. 28— 9:00–10:00	Lecture: Care of the Orchard—Tillage.	R. H. Taylor.
10:00–11:00	Lecture: Traction Engines.	James Koeber.
11:00–12:00	Lecture: Soil Chemistry.	C. B. Lipman.
1:00– 3:00	Practice: Soil Chemistry.	Alfred Smith.
3:00– 5:00	Practice: Study of Fruit Buds.	R. H. Taylor.
Oct. 29— 9:00–10:00	Lecture: Irrigation of Alfalfa.	S. H. Beckett.
10:00–11:00	Lecture: Cover Crops and Shade Crops in Orchard Practice.	R. H. Taylor.
11:00–12:00	Lecture: Cost of Product; Profit and Loss.	R. L. Adams.
1:00– 3:00	Practice: Farm Management.	R. L. Adams.

Oct. 30— 9:00–10:00	Lecture: Renovation of Old Orchards.	R. H. Taylor.
11:00–12:00	Lecture: Petroleum Products, Fuel and Fuel Oil.	James Koeber
1:00– 2:00	Lecture: Frost Injuries and Frost Protection—Windbreaks.	R. H. Taylor.
3:00– 5:00	Practice: Examination and Discussion of Manure Spreaders and Mowers.	James Koeber.
Oct. 31— 9:00–10:00	Lecture: Apple Culture.	R. H. Taylor.
10:00–12:00	Practice: Irrigation of Field Crops.	S H. Beckett.

Nov. 2— 8:00– 9:00	Lecture: Apple Culture.	R. H. Taylor.
10:00–11:00	Lecture: Pear Culture.	R. H. Taylor.
11:00–12:00	Lecture: Soil Chemistry.	C. B. Lipman.
1:00– 3:00	Practice: Soil Chemistry.	Alfred Smith.
3:00– 5:00	Practice: Demonstration and Practice in Pruning Young Trees.	R. H. Taylor.

Short Course students are given demonstrations in tree surgery and other practical methods of controlling plant diseases.

Nov. 3— 9:00–10:00	Lecture: Irrigation of Orchards.	B. A. Etcheverry.
10:00–11:00	Lecture: Cherry Culture.	R. H. Taylor.
1:00– 2:00	Lecture: Farm Labor.	R. L. Adams.
2:00– 4:00	Practice: Pruning Small Fruits.	R. H. Taylor.

Nov. 4—	9:00–10:00	Lecture: Apricot Culture.	R. H. Taylor.
	10:00–11:00	Lecture: Use of the Steel Square.	H. L. Belton.
	11:00–12:00	Lecture: Soil Bacteriology.	C. B. Lipman.
	1:00– 3:00	Practice: Soil Bacteriology.	Alfred Smith.
	3:00– 5:00	Practice: Demonstration and Practice in Pruning Old Trees.	R. H. Taylor.
Nov. 5—	9:00–10:00	Lecture: Irrigation of Orchards.	B. A. Etcheverry.
	10:00–11:00	Lecture: Peach Culture.	R. H. Taylor.
	11:00–12:00	Lecture: Farm Accounts. Use of Cost Data.	R. L. Adams.
	1:00– 3:00	Practice: Farm Management.	R. L. Adams.
Nov. 6—	9:00–10:00	Lecture: Peach Culture.	R. H. Taylor.
	11:00–12:00	Lecture: Factors Concerned in Constructing Buildings.	H. L. Belton.
	1:00– 2:00	Lecture: Plum and Prune Culture.	R. H. Taylor.
	3:00– 5:00	Practice: Cutting Model Rafters, etc.	H. L. Belton.
Nov. 7—	9:00–10:00	Lecture: Plum and Prune Culture.	R. H. Taylor.
	10:00–12:00	Practice: Construction and Use of Concrete Pipe Lines.	S. H. Beckett.

Nov. 9—	8:00– 9:00	Lecture: Almonds, Culture and Handling.	R. H. Taylor.
	10:00–11:00	Lecture: Walnut Culture.	R. H. Taylor
	11:00–12:00	Lecture: Soil Bacteriology.	C. B. Lipman.
	1:00– 3:00	Practice: Soil Bacteriology.	Alfred Smith.
	3:00– 5:00	Practice: Preparation of Sprays.	R. H. Taylor.

Lectures and practice in spraying are given.

Nov. 10—	9:00–10:00	Lecture: Pumping Plants for Irrigation. B. A. Etcheverry.
	10:00–11:00	Lecture: Walnuts—Culture and Handling. R. H. Taylor.
	11:00–12:00	Lecture: The Draft Horse in California. J. I. Thompson.
	1:00– 2:00	Lecture: Renting and Leasing Land; Selling Service, Hiring Men, Loans, etc. R. L. Adams.
	2:00– 4:00	Demonstration: Slaughter Test. G. H. True.
	4:00– 6:00	Practice: Study of Some Fruit and Nut Types. B. B. Pratt and R. H. Taylor.
Nov. 11—	9:00–10:00	Lecture: Bush Fruit Culture. R. H. Taylor.
	10:00–11:00	Lecture: Use of the Forge. R. C. Ingrim.
	11:00–12:00	Lecture: Bacteria of the Soil. C. B. Lipman.
	1:00– 3:00	Practice: Bacteria of the Soil. Alfred Smith.
	3:00– 5:00	Practice: Spraying. R. H. Taylor.
Nov. 12—	8:00– 9:00	Lecture: Care and Keeping of Work Stock. J. I. Thompson.
	9:00–10:00	Lecture: Pumping Plants for Irrigation. B. A. Etcheverry.
	11:00–12:00	Lecture: Farm Law. R. L. Adams.
	1:00– 3:00	Practice: Farm Management. R. L. Adams.
	3:00– 5:00	Practice: Judging Draft Horses. J. I. Thompson.
Nov. 13—	9:00–10:00	Lecture: Sprays and Spraying. R. H. Taylor.
	10:00–11:00	Lecture: Care of Brood Mares and Colts. J. I. Thompson.
	11:00–12:00	Lecture: Welding and Tempering. R. C. Ingrim.
	1:00– 3:00	Practice: Judging Mules. J. I. Thompson.
	3:00– 5:00	Practice: Forge and Welding. R. C. Ingrim.
Nov. 14—	8:00– 9:00	Lecture: The Curing and Drying of Fruit. R. H. Taylor.
	9:00–10:00	Lecture: Behavior of Deciduous Fruit in Storage and on the Market. B. B. Pratt.
	10:00–12:00	Demonstration: Inspection of Irrigation System of the Farm. S. H. Beckett.

CITRUS AND SEMI-TROPICAL FRUITS

Oct. 26—	8:00– 9:00	Lecture: Citrus Fruits, Botanical Classification—Physiology. J. E. Coit.
	10:00–11:00	Lecture: Varieties of Citrus Fruits. J. E. Coit.
	11:00–12:00	Lecture: Soil Chemistry. C. B. Lipman.
	1:00– 3:00	Practice: Soil Chemistry. Alfred Smith.
	3:00– 4:00	Lecture: Propagation of Citrus Fruits. J. E. Coit.
Oct. 27—	9:00–10:00	Lecture: Methods of Irrigation and Conveying Water. S. T. Harding.
	10:00–11:00	Lecture: Soils, Selecting Site, Clearing and Leveling. J. E. Coit.
	1:00– 2:00	Lecture: Marketing Farm Products. R. L. Adams.
	4:00– 5:00	Lecture: Fig Culture and Caprification. I. J. Condit.

Oct. 28—	9:00–10:00	Lecture: Harvesting, Packing and Marketing Figs. I. J. Condit.
	10:00–11:00	Lecture: Traction Engines. James Koeber.
	11:00–12:00	Lecture: Soil Chemistry. C. B. Lipman.
	3:00– 4:00	Lecture: Date Culture in California. I. J. Condit.
Oct. 29—	9:00–10:00	Lecture: Irrigation of Alfalfa. S. H. Beckett.
	10:00–11:00	Lecture: Date Varieties—Artificial Ripening and Packing for Market. I. J. Condit.
	11:00–12:00	Lecture: Cost of Product. Profit and Loss. R. L. Adams.
	1:00– 3:00	Practice: Farm Management. R. L. Adams.
Oct. 30—	8:00–10:00	Practice: A Study of Citrus Root-stocks. I. J. Condit.
	11:00–12:00	Lecture: Petroleum Products, Fuel and Fuel Oil. James Koeber.
	1:00– 2:00	Lecture: Frost Injuries and Frost Protection—Windbreaks. R. H. Taylor.
	3:00– 5:00	Practice: Examination and Discussion of Manure Spreaders and Mowers. James Koeber.
Oct. 31—	8:00–10:00	Practice: Making Fig Cuttings. A Study of Date Varieties. I. J. Condit.
	10:00–12:00	Practice: Irrigation of Field Crops. S. H. Beckett.

Student Practice.—The use of the marked tent has done much toward eliminating guesswork in the practice of fumigating citrus trees for the control of scale insects.

Nov. 2—	8:00– 9:00	Lecture: Preparation of the Land and Planting Citrus Trees. J. E. Coit.
	10:00–11:00	Lecture: Cultivating and Fertilizing the Citrus Orchard. J. E. Coit.
	11:00–12:00	Lecture: Soil Chemistry. C. B. Lipman.
	1:00– 3:00	Practice: Soil Chemistry. Alfred Smith.
	3:00– 4:00	Lecture: Cover Crops, Humus and Irrigation for Oranges and Lemons. J. E. Coit.
Nov. 3—	9:00–10:00	Lecture: Irrigation of Orchards. B. A. Etcheverry.
	10:00–11:00	Lecture: Pruning and Top-working Citrus Trees. J. E. Coit.
	1:00– 2:00	Lecture: Farm Labor. R. L. Adams.
	4:00– 5:00	Lecture: Avocado Culture in California. I. J. Condit.
Nov. 4—	9:00–10:00	Lecture: Avocado Varieties and Marketing. I. J. Condit.
	10:00–11:00	Lecture: Use of the Steel Square. H. L. Belton.
	11:00–12:00	Lecture: Soil Bacteriology. C. B. Lipman.
	1:00– 3:00	Practice: Soil Bacteriology. Alfred Smith.
	3:00– 4:00	Lecture: Loquat Culture in California. I. J. Condit.
Nov. 5—	9:00–10:00	Lecture: Irrigation of Orchards. B. A. Etcheverry.
	10:00–11:00	Lecture: Persimmon Culture—Varieties and Marketing. I. J. Condit.
	11:00–12:00	Lecture: Farm Accounts. Use of Cost Data. R. L. Adams.
	1:00– 3:00	Practice: Farm Management. R. L. Adams.
Nov. 6—	8:00–10:00	Practice: A Study of the Structure of Citrus Blossoms and Fruit. I. J. Condit.
	11:00–12:00	Lecture: Factors Concerned in Constructing Buildings. H. L. Belton.
	3:00– 5:00	Practice: Cutting Model Rafters, etc. H. L. Belton.
Nov. 7—	8:00–10:00	Practice: Judging Citrus Fruits by the Score Card. I. J. Condit.
	10:00–12:00	Practice: Construction and Use of Concrete Pipe Lines. S. H. Beckett.
Nov. 9—	8:00– 9:00	Lecture: Frosts and Orchard Heating in Relation to Citrus Orchards. J. E. Coit.
	10:00–11:00	Lecture: Diseases Affecting Citrus and Their Control. J. E. Coit.
	11:00–12:00	Lecture: Soil Bacteriology. C. B. Lipman.
	1:00– 3:00	Practice: Soil Bacteriology. Alfred Smith.
	3:00–5:00	Lecture and Demonstration: Insects Affecting Citrus and Their Control. Fumigation. J. E. Coit.
Nov. 10—	9:00–10:00	Lecture: Pumping Plants for Irrigation. B. A. Etcheverry.
	10:00–11:00	Lecture: Profit and Loss, or Economics of the California Citrus Industry. J. E. Coit.
	11:00–12:00	Lecture: The Draft Horse in California. J. I. Thompson.

Nov. 10—	1:00– 2:00	Lecture: Renting and Leasing Land; Selling Service, Hiring Men, Loans, etc. R. L. Adams.
	2:00– 4:00	Demonstration: Slaughter Test. G. H. True.
	4:00– 5:00	Lecture: Cherimoya Culture in California. I. J. Condit.
Nov. 11—	9:00–10:00	Lecture: Feijoa Culture in California. I. J. Condit.
	10:00–11:00	Lecture: The Use of the Forge. R. C. Ingrim.
	11:00–12:00	Lecture: Bacteria of the Soil. C. B. Lipman.
	1:00– 3:00	Practice: Bacteria of the Soil. Alfred Smith.
	3:00– 4:00	Lecture: Guavas, Their Varieties and Culture in California. I. J. Condit.
Nov. 12—	9:00–10:00	Lecture: Pumping Plants for Irrigation. B. A. Etcheverry.
	10:00–11:00	Lecture: Miscel. Semi-tropical Fruits. I. J. Condit.
	11:00–12:00	Lecture: Farm Law. R. L. Adams.
	1:00– 3:00	Practice: Farm Management. R. L. Adams.
	3:00– 5:00	Practice: Judging Draft Horses. J. I. Thompson.
Nov 13—	8:00–10–00	Practice: A Study of Varieties and Types of the Different Semi-tropical Fruits. I. J. Condit.
	10:00–11:00	Lecture: Care of Brood Mares and Colts. J. I. Thompson.
	11:00–12:00	Lecture: Welding and Tempering. R. C. Ingrim.
	1:00– 3:00	Practice: Judging Mules. J. I. Thompson.
	3:00– 5:00	Practice: Forge and Welding. R. C. Ingrim.
Nov. 14—	8:00–10:00	Practice: A Study of Different Types of Orchard Heaters and Practice in Operating Them. I. J. Condit.
	10:00–12:00	Demonstration: Inspection of Irrigation System of the Farm. S. H. Beckett.

VITICULTURE AND OLIVES

Oct. 26—	8:00– 9:00	Lecture: Nature, Habit, and Requirements of the Vine. F. C. H. Flossfeder.
	11:00–12:00	Lecture: Soil Chemistry. C. B. Lipman.
	1:00– 3:00	Practice: Soil Chemistry. Alfred Smith.
	3:00– 5:00	Practice: Making Cuttings and Examinations. F. C. H. Flossfeder.
Oct. 27—	8:00– 9:00	Lecture: Choice of Location for the Vineyard. F. C. H. Flossfeder.
	9:00–10:00	Lecture: Methods of Irrigation and Conveying Water. S. T. Harding.
	1:00– 2:00	Lecture: Marketing Farm Products. R. L. Adams.
	2:00– 4:00	Practice: Propagation of the Olive. W. F. Oglesby.
	4:00– 5:00	Lecture: Nature and Requirements of the Olive. W. F. Oglesby.
Oct. 28—	8:00– 9:00	Lecture: Cost and Net Returns. F. C. H. Flossfeder.
	9:00–10:00	Lecture: Cultivation of the Olive. W. F. Oglesby.
	10:00–11:00	Lecture: Traction Engines. James Koeber.
	11:00–12:00	Lecture: Soil Chemistry. C. B. Lipman.
	1:00– 3:00	Practice: Soil Chemistry. Alfred Smith.
	3:00– 5:00	Practice: Grafting. F. C. H. Flossfeder.

Oct. 29—	9:00–10:00	Lecture: Irrigation of Alfalfa. S. H. Beckett.
	10:00–11:00	Lecture: Choice of Varieties and Planting Stock. F. C. H. Flossfeder.
	11:00–12:00	Lecture: Cost of Product. Profit and Loss. R. L. Adams.
	1:00– 3:00	Practice: Farm Management. R. L. Adams.
Oct. 30—	8:00– 9:00	Lecture: Nursery Work and Grafting Vinifera. F. C. H. Flossfeder.
	11:00–12:00	Lecture: Petroleum Products, Fuel and Fuel Oil. James Koeber.
	3:00– 5:00	Practice: Examination and Discussion of Manure Spreaders and Mowers. James Koeber.

Callusing box and dipping vat are desirable in the production of grafted resistant vines.

Oct. 31—	8:00– 9:00	Lecture: Grafting Resistant Vines. F. C. H. Flossfeder
	10:00–12:00	Practice: Irrigation of Field Crops. S. H. Beckett

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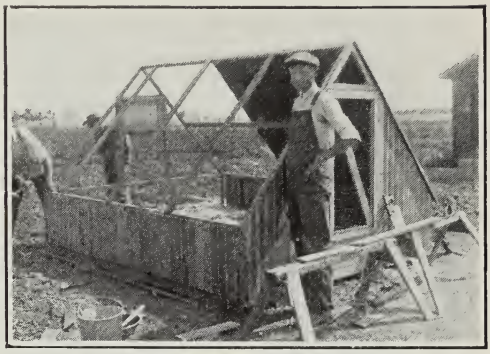
Nov. 2—	8:00– 9:00	Lecture: Preparation of the Land—Vineyard Plans. F. C. H. Flossfeder.
	11:00–12:00	Lecture: Soil Chemistry. C. B. Lipman.
	1:00– 3:00	Practice: Soil Chemistry. Alfred Smith.
	3:00– 5:00	Practice: Laying Out a Vineyard. F. C. H. Flossfeder.
Nov. 3—	8:00– 9:00	Lecture: Laying Out and Planting Vineyards. F. C. H. Flossfeder.
	9:00–10:00	Lecture: Irrigation of Orchards. B. A. Etcheverry.
	1:00– 2:00	Lecture: Farm Labor. R. L. Adams.
	2:00– 4:00	Practice: Preparation of Grape Juice. W. V. Cruess.
	4:00– 5:00	Lecture: Propagation of the Olive. W. F. Oglesby.
Nov. 4—	8:00– 9:00	Lecture: Cultivation, Irrigation and Fertilization. F. C. H. Flossfeder.
	9:00–10:00	Lecture: Pruning Olives. W. F. Oglesby.
	10:00–11:00	Lecture: Use of the Steel Square. H. L. Belton.
	11:00–12:00	Lecture: Soil Bacteriology. C. B. Lipman.
	1:00– 3:00	Practice: Soil Bacteriology. Alfred Smith.
	3:00– 5:00	Lecture: Fungous Diseases of the Vine. F. C. H. Flossfeder.
Nov. 5—	9:00–10:00	Lecture: Irrigation of Orchards. B. A. Etcheverry.
	10:00–11:00	Lecture: Vine Pruning—Principles. F. C. H. Flossfeder.
	11:00–12:00	Lecture: Farm Accounts. Use of Cost Data. R. L. Adams.
	1:00– 3:00	Practice: Farm Management. R. L. Adams.
Nov. 6—	8:00– 9:00	Lecture: Vine Pruning—Methods. F. C. H. Flossfeder.
	11:00–12:00	Lecture: Factors Concerned in Constructing Buildings. H. L. Belton.
	3:00– 5:00	Practice: Cutting Model Rafters, etc. H. L. Belton.
Nov. 7—	8:00– 9:00	Lecture: Fungous Diseases of the Vine, and Use of Sulphur. F. C. H. Flossfeder.
	10:00–12:00	Practice: Construction and Use of Concrete Pipe Lines. S. H. Beckett.

Nov. 9—	8:00– 9:00	Lecture: Non-parasitic Diseases of the Vine. F. C. H. Flossfeder.
	9:00–11:00	Practice: Preparation of Grape Juice. W. V. Cruess.
	11:00–12:00	Lecture: Soil Bacteriology. C. B. Lipman.
	1:00– 3:00	Practice: Soil Bacteriology. Alfred Smith.
	3:00– 5:00	Practice: Field Work with Phylloxera. F. C. H. Flossfeder.

Nov.10—	8:00– 9:00	Lecture: Insects Affecting the Vine. F. C. H. Flossfeder.
	9:00–10:00	Lecture: Pumping Plants for Irrigation. B. A. Etcheverry.
	11:00–12:00	Lecture: The Draft Horse in California. J. I. Thompson.
	1:00– 2:00	Lecture: Renting and Leasing Land; Selling Service, Hiring Men, Loans, etc. R. L. Adams.
	2:00– 4:00	Demonstration: Slaughter Test. G. H. True.
	4:00– 5:00	Lecture: Olive Pickling and Oil Making. W. F. Oglesby.
Nov.11—	8:00– 9:00	Lecture: Phylloxera and Resistant Vines. F. C. H. Flossfeder.
	9:00–10:00	Lecture: Practice and Demonstrations. W. F. Oglesby.
	10:00–11:00	Lecture: The Use of the Forge. R. C. Ingrim.
	11:00–12:00	Lecture: Bacteria of the Soil. C. B. Lipman.
	1:00– 3:00	Practice: Bacteria of the Soil. Alfred Smith.
	3:00– 5:00	Practice: Field Excursion. F. C. H. Flossfeder.
Nov.12—	8:00– 9:00	Lecture: Care and Keeping of Work Stock. J. I. Thompson.
	9:00–10:00	Lecture: Pumping Plants for Irrigation. S. H. Beckett.
	10:00–11:00	Lecture: Raisins—Gathering the Crop. F. C. H. Flossfeder.
	11:00–12:00	Lecture: Farm Law. R. L. Adams.
	1:00– 3:00	Practice: Farm Management. R. L. Adams.
	3:00– 5:00	Practice: Judging Draft Horses. J. I. Thompson.
Nov.13—	8:00– 9:00	Lecture: Grape Juice. F. C. H. Flossfeder.
	10:00–11:00	Lecture: Care of Brood Mares and Colts. J. I. Thompson.
	11:00–12:00	Lecture: Welding and Tempering. R. C. Ingrim.
	1:00– 3:00	Practice: Judging Mules. J. I. Thompson.
	3:00– 5:00	Practice: Forge and Welding. R. C. Ingrim.
Nov.14—	8:00– 9:00	Lecture: Grape Vinegar. F. C. H. Flossfeder.
	10:00–12:00	Demonstration: Inspection of Irrigation System of the Farm. S. H. Beckett.

THE SHORT COURSE IN POULTRY HUSBANDRY

October 5 to November 14, 1914



Practical laboratory and field work in designing and building poultry houses goes hand in hand with the class-room lectures in poultry house construction.

The object of the course in Poultry Husbandry is to give the student as comprehensive and detailed a grasp as possible of the fundamental principles of this subject and their practical application to the business side of poultry farming in order that he or she may be better fitted to successfully handle the practical, economic problems that are continually arising in the development and management of a commercial poultry plant. It is not sufficient that a poultryman know how to hatch, rear, feed, breed, and care for fowls. He must also know how to handle tools and skillfully perform such carpentry work as building houses, making coops, nests, hoppers, crates, etc.; how to grow such crops as alfalfa, rape, kale, beets, etc., for green feed for his fowls; how to irrigate his crops; how to plow and otherwise manipulate different soils for best results; how to operate, repair and care for such farm machinery as gasoline engines, bone cutters, feed mills, alfalfa cutters, field tools, etc.; and finally it is extremely important for a poultryman to know how to keep a clear, concise set of accounts, know the exact cost of operation in every phase of the work and maintain his business on a firm financial basis. The course of instruction in Poultry Husbandry has been designed to meet these needs and give each student as full and complete instruction in all the more important phases of the poultry business as can be accomplished in a six weeks' course.

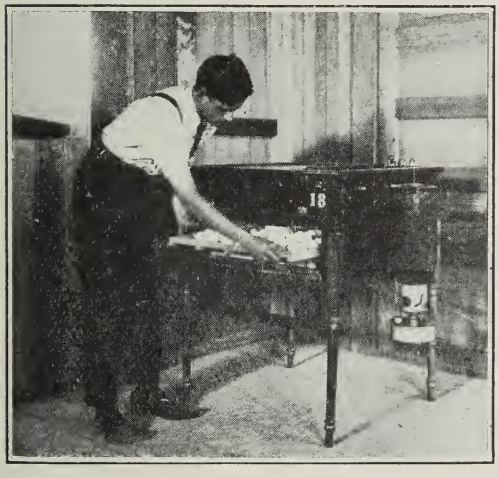
All short course students in Poultry Husbandry are therefore expected to attend lectures and practice work in Soils, Irrigation, Farm Machinery, Farm Management, and three weeks of Forage Crops as shown in the schedule, pages 46 to 52.

Class in Poultry Husbandry.

Poultry Management.—The classroom work in this course will treat in detail of the selection and laying out of a poultry ranch; of natural and artificial incubation and brooding of chicks; the selection of fowls for constitutional vigor; the laws of breeding and their application to the building up of flocks of heavy layers or choice table fowls; poultry house construction; the making of poultry equipment such as trap-nests feed hoppers, fattening crates, etc.; the principles of poultry feeding and the best methods of feeding baby chicks, growing stock, laying hens, fowls to be fattened for market, etc.; killing, picking and dressing stock for market; selecting and grading market eggs; packing and marketing poultry products to the best advantage; mating and handling the breeders; poultry parasites; diseases and sanitation; the general care and management of a poultry ranch.

The laboratory and field work carried on in conjunction with the lectures will include practice in learning to know the different breeds and varieties of fowls, their characteristics and utility qualities; grading, candling and judging market eggs; making disinfectants and lice powder; studying the feeding qualities, both physical and chemical, of the various grains and mill feeds, and animal and mineral preparations used in poultry feeding; killing, picking and dressing fowls for market and home use; caponizing, laying out poultry house foundations, drawing plans of poultry equipment, estimating materials, etc.

Poultry Problems.—This course will take up the study and discussion of the more advanced problems of poultry keeping and a review of the latest Experiment Station publications and other literature on these subjects for the purpose of giving the student not only a broader conception of the wide field covered by the science and art of poultry raising but also to supply him with a fuller knowledge of the latest scientific advances made toward solving some of the problems which are of such extreme economic importance to the practical side of poultry husbandry.



Students are given practice in hatching chicks.

Incubation and Brooding.—A practice course in operating incubators; keeping records; hatching eggs; brooding, feeding and caring for young chicks, designed to give students actual practice in artificially hatching and rearing chicks. Each student will be given an incubator to overhaul and operate for one week of practice before being given any eggs. The incubator will then be set with eggs. When the chicks hatch each student will place his chicks in a separate pen in the brooder house and care for them till the end of the course. Open only to students taking all the poultry work.

SCHEDULE OF SHORT COURSE IN POULTRY HUSBANDRY

OCTOBER 5 TO NOVEMBER 14, 1914

Oct. 5—	8:00– 9:00	Practice: A Study of Construction and Operation of Incubators. W. E. Lloyd.
	10:00–11:00	Lecture: Origin and Classification of Poultry. J. E. Dougherty.
	11:00–12:00	Lecture: Origin and Formation of Soils. C. F. Shaw.
	12:00–12:10	Practice: Recording Incubator Temperature. W. E. Lloyd.
	1:00– 3:00	Practice: Soils. Alfred Smith.
	5:00– 5:30	Practice: Operating Incubators. W. E. Lloyd.
Oct. 6—	8:00– 9:00	Practice: Operating an Incubator. W. E. Lloyd.
	9:00–10:00	Lecture: Irrigation Resources and Conditions in California. Frank Adams.
	10:00–11:00	Lecture: Principles of Dry Farming. B. A. Madson.
	11:00–12:00	Lecture: History and Distinctive Characteristics of Breeds of Asiatic Class. J. E. Dougherty.
	12:00–12:10	Practice: Recording Incubator Temperature. W. E. Lloyd.
	1:00– 2:00	Lecture: What Farm Management Is and Its Scope; Qualification of a Good Farm Manager, Present Application of Farm Management to California Conditions. R. L. Adams.
	3:00– 5:00	Practice: Identification and Study of Various Classes of Fowls. J. E. Dougherty.
	5:00– 5:30	Practice: Incubator. W. E. Lloyd.
Oct. 7—	8:00– 9:00	Practice: Incubator. W. E. Lloyd.
	9:00–10:00	Lecture: Conservation of Moisture. B. A. Madson.
	10:00–11:00	Lecture: Gas Engines. F. L. Peterson.
	11:00–12:00	Lecture: Origin and Formation of Soils. C. F. Shaw.
	12:00–12:10	Practice: Recording Temperatures. W. E. Lloyd.
	1:00– 3:00	Practice: Soils. Alfred Smith.
	3:00– 4:00	Lecture: History and Distinctive Characteristics of the American and English Breeds. J. E. Dougherty.
	5:00– 5:30	Practice: Incubator. W. E. Lloyd.
Oct. 8—	8:00– 9:00	Practice: Incubator. Preparing Hatching Eggs. W. E. Lloyd.
	9:00–10:00	Lecture: Irrigation Laws and Organization of Water Companies. Frank Adams.
	10:00–11:00	Lecture: Wheat Culture. B. A. Madson.
	11:00–12:00	Lecture: How Farm Management Covers the Choice of a Ranch, Layout of Fields, Capital, Equipment, etc. R. L. Adams.
	12:00–12:10	Practice: Recording Temperatures. W. E. Lloyd.
	1:00– 3:00	Practice: Farm Management. R. L. Adams.
	3:00– 5:00	Practice: Breeds and Breed Types. J. E. Dougherty.
	5:00– 5:30	Practice: Incubator. W. E. Lloyd.

Oct. 9—	8:00– 9:00	Practice: Incubator, Setting the Eggs. W. E. Lloyd.
	10:00–11:00	Lecture: History and Distinctive Characteristics of Mediterranean, French, Polish, etc. Classes of Fowls. J. E. Dougherty.
	11:00–12:00	Lecture: Valve Grinding, Ignition, Adjustment. F. L. Peterson.
	12:00–12:10	Practice: Recording Incubator Temperatures. W. E. Lloyd.
	1:00– 3:00	Lecture: Constitutional Vigor, Its Necessity in Poultry Keeping. J. E. Dougherty.
	3:00– 5:00	Practice: Handling Gas Engines, etc. F. L. Peterson.
	5:00– 5:30	Practice: Incubator. W. E. Lloyd.
Oct. 10—	7:30– 8:00	Practice: Incubation—Second Day of Incubation. W. E. Lloyd.
	8:00–10:00	Practice: Farm Crops. B. A. Madson.
	10:00–12:00	Lecture: Soil Moisture and Its Relation to Plant Growth. O. W. Israelson.
	12:00–12:10	Practice: Recording Incubator Temperatures. W. E. Lloyd.
	5:00– 5:30	Practice: Incubation. W. E. Lloyd.

Oct. 12—	8:00– 9:00	Practice: Incubation—Fourth Day of Incubation. W. E. Lloyd.
	10:00–11:00	Lecture: Variety Characteristics. Indications of Age, Sex, and Vigor. J. E. Dougherty.
	11:00–12:00	Lecture: Soil—Texture, Structure, and Humus. C. F. Shaw.
	12:00–12:10	Practice: Recording Incubation Temperatures. W. E. Lloyd.
	1:00– 3:00	Practice: Soils. Alfred Smith.
	5:00– 5:30	Practice: Incubation. W. E. Lloyd.
Oct. 13—	8:00– 9:00	Practice: Incubation. W. E. Lloyd.
	9:00–10:00	Lecture: Selection of an Irrigated Farm Sources of Water Supply. S. H. Beckett.
	10:00–11:00	Lecture: Wheat Culture. B. A. Madson.
	11:00–12:00	Lecture: Selecting and Laying Out a Poultry Farm. J. E. Dougherty.
	12:00–12:10	Practice: Recording Incubator Temperatures. W. E. Lloyd.
	1:00– 2:00	Lecture: Planning the Farm Work, Rotations, Cropping Systems, etc. R. L. Adams.
	3:00– 5:00	Practice: Variety Characteristics, Age, Sex, and Vigor Indications. J. E. Dougherty.
	5:00– 5:30	Practice: Incubation. W. E. Lloyd.
Oct. 14—	8:00– 9:00	Practice: Incubation—Sixth Day. W. E. Lloyd.
	9:00–10:00	Lecture: Barley Culture. B. A. Madson.
	10:00–11:00	Lecture: Electricity, Electric Motors, etc. F. L. Peterson.

Oct. 14—11:00–12:00	Lecture: Soil Moisture—Forms, Amounts, Movements.	C. F. Shaw.
12:00–12:10	Practice: Recording Incubator Temperatures.	W. E. Lloyd.
1:00– 3:00	Practice: Soils.	Alfred Smith.
3:00– 4:00	Lecture: The Principles of Incubation.	J. E. Dougherty.
5:00– 5:30	Practice: Incubation.	W. E. Lloyd.
Oct. 15— 8:00– 9:00	Practice: Incubation—Seventh Day.	W. E. Lloyd.
9:00–10:00	Lecture: Units of Measurement and Methods of Measuring Water.	S. H. Beckett.
10:00–11:00	Lecture: Oat Culture.	B. A. Madson.
11:00–12:00	Lecture: Economizing and Eliminating Waste.	R. L. Adams.
12:00–12:10	Practice: Recording Incubator Temperatures.	W. E. Lloyd.
1:00– 3:00	Practice: Farm Management.	R. L. Adams.
3:00– 5:00	Practice: Study of Structure of an Egg.	J. E. Dougherty.
5:00– 5:30	Practice: Incubation—Test Eggs.	W. E. Lloyd.
Oct. 16— 8:00– 9:00	Practice: Incubation—Eighth Day.	W. E. Lloyd.
10:00–11:00	Lecture: How to Operate an Incubator.	J. E. Dougherty.
11:00–12:00	Lecture: Pumping, Rural Lighting Plants.	F. L. Peterson.
12:00–12:10	Practice: Recording Incubator Temperatures.	W. E. Lloyd.
1:00– 3:00	Lecture: The Structure of Egg Laying Organs of a Hen.	J. E. Dougherty
3:00– 5:00	Practice: Soldering, Babbitt Pouring, Belt Lacing.	F. L. Peterson.
5:00– 5:30	Practice: Incubation.	W. E. Lloyd.
Oct. 17— 7:30– 8:00	Practice: Incubation—Ninth Day.	W. E. Lloyd.
8:00–10:00	Practice: Farm Crops.	B. A. Madson.
10:00–12:00	Field Demonstration: Measurement of Water.	S. H. Beckett.
12:00–12:10	Practice: Recording Incubator Temperatures.	W. E. Lloyd.
5:00– 5:30	Practice: Incubation.	W. E. Lloyd.

Oct. 19— 8:00– 9:00	Practice: Incubation—Eleventh Day.	W. E. Lloyd.
10:00–11:00	Lecture: Brooding Chicks.	J. E. Dougherty.
11:00–12:00	Lecture: Mulches, Modifying Moisture Relations.	C. F. Shaw.
12:00–12:10	Practice: Recording Incubator Temperatures.	W. E. Lloyd.
1:00– 3:00	Practice: Soils.	Alfred Smith.
5:00– 5:30	Practice: Incubation.	W. E. Lloyd.

Oct. 20—	8:00– 9:00	Practice: Incubation—Twelfth Day. W. E. Lloyd.
	9:00–10:00	Lecture: Water Requirements of Crops. B. A. Etcheverry.
	10:00–11:00	Lecture: Corn Culture. B. A. Madson.
	11:00–12:00	Lecture: Poultry Housing. J. E. Dougherty.
	12:00–12:10	Practice: Recording Incubator Temperatures. W. E. Lloyd.
	1:00– 2:00	Lecture: A Self-supporting Ranch. R. L. Adams.
	3:00– 5:00	Practice: Judging and Candling Eggs. J. E. Dougherty.
	5:00– 5:30	Practice: Incubation. W. E. Lloyd.
Oct. 21—	8:00– 9:00	Practice: Incubation—Thirteenth Day. W. E. Lloyd.
	9:00–10:00	Lecture: Culture of Non-Saccharine Sorghums. B. A. Madson.
	10:00–11:00	Lecture: Principles of Draft, Wagon, Plow, etc. James Koeber.
	11:00–12:00	Lecture: Aeration, Soil Heat, Modifications. C. F. Shaw.
	12:00–12:10	Practice: Recording Incubator Temperatures. W. E. Lloyd.
	1:00– 3:00	Practice: Soils. Alfred Smith.
	3:00– 4:00	Lecture: Poultry Housing. J. E. Dougherty.
	5:00– 5:30	Practice: Incubation. W. E. Lloyd.
Oct. 22—	8:00– 9:00	Practice: Incubation—Fourteenth Day. W. E. Lloyd.
	9:00–10:00	Lecture: Duty of Water. S. H. Beckett.
	10:00–11:00	Lecture: Rice Culture. B. A. Madson.
	11:00–12:00	Lecture: The Specialized Ranch. R. L. Adams.
	12:00–12:10	Practice: Recording Incubator Temperatures. W. E. Lloyd.
	1:00– 3:00	Practice: Farm Management. R. L. Adams.
	3:00– 5:00	Practice: Laying Out a Foundation. J. E. Dougherty.
	5:00– 5:30	Practice: Incubation, Test Eggs Second Time. W. E. Lloyd.
Oct. 23—	8:00– 9:00	Practice: Incubation—Fifteenth Day. W. E. Lloyd.
	10:00–11:00	Lecture: Poultry Housing. J. E. Dougherty.
	11:00–12:00	Lecture: Farm Implements and Machinery. James Koeber.
	12:00–12:10	Practice: Recording Incubator Temperatures. W. E. Lloyd.
	1:00– 3:00	Lecture: The Care of Market Eggs. J. E. Dougherty.
	3:00– 5:00	Practice: Examination and Discussion of Tillage Implements. James Koeber.
	5:00– 5:30	Practice: Incubation. W. E. Lloyd.
Oct. 24—	7:30– 8:00	Practice: Incubation—Sixteenth Day. W. E. Lloyd.
	8:00–10:00	Practice: Field Crops. B. A. Madson.
	10:00–12:00	Practice: Preparation of Land for Irrigation. S. H. Beckett.
	12:00–12:10	Practice: Recording Incubator Temperatures. W. E. Lloyd.
	5:00– 5:30	Practice: Incubation. W. E. Lloyd.

Oct. 26— 8:00– 9:00	Practice: Incubation—Eighteenth Day.	
10:00–11:00	Lecture: Poultry Housing.	J. E. Dougherty.
11:00–12:00	Lecture: Soil Chemistry.	C. B. Lipman.
12:00–12:10	Practice: Recording Incubator Temperatures.	W. E. Lloyd.
1:00– 3:00	Practice: Soil Chemistry.	Alfred Smith.
5:00– 5:30	Practice: Incubation.	W. E. Lloyd.
Oct. 27— 8:00– 9:00	Practice: Incubation—Nineteenth Day.	W. E. Lloyd.
9:00–10:00	Lecture: Methods of Irrigation and Conveying Water.	S. T. Harding.
10:00–11:00	Lecture: Potato Culture.	B. A. Madson.
11:00–12:00	Lecture: Poultry Housing.	J. E. Dougherty.
12:00–12:10	Practice: Recording Incubator Temperatures.	W. E. Lloyd.
1:00– 2:00	Lecture: Marketing Farm Products.	R. L. Adams.
3:00– 5:00	Practice: Drawing Plans of Poultry Hoppers, Nests, etc.	J. E. Dougherty.
5:00– 5:30	Practice: Incubation.	W. E. Lloyd.
Oct. 28— 8:00– 9:00	Practice: Incubation—Twentieth Day.	W. E. Lloyd.
9:00–10:00	Lecture: Alfalfa Culture.	B. A. Madson.
10:00–11:00	Lecture: Traction Engines.	James Koeber.
11:00–12:00	Lecture: Soil Chemistry.	C. B. Lipman.
12:00–12:10	Practice: Recording Incubator Temperatures.	W. E. Lloyd.
1:00– 3:00	Practice: Soil Chemistry.	Alfred Smith.
3:00– 4:00	Lecture: Poultry Feeding.	J. E. Dougherty.
5:00– 5:30	Practice: Incubation.	W. E. Lloyd.
Oct. 29— 8:00– 9:00	Practice: Incubation—Twenty-first Day.	W. E. Lloyd.
9:00–10:00	Lecture: Irrigation of Alfalfa.	S. H. Beckett.
10:00–11:00	Lecture: Alfalfa Culture.	B. A. Madson.
11:00–12:00	Lecture: Cost of Product; Profit and Loss.	R. L. Adams.
12:00–12:10	Practice: Recording Incubator Temperatures.	W. E. Lloyd.
1:00– 3:00	Practice: Farm Management.	R. L. Adams.
3:00– 5:00	Practice: Poultry House Construction.	J. E. Dougherty.
5:00– 5:30	Practice: Incubation.	W. E. Lloyd.
Oct. 30— 8:00– 9:00	Practice: Incubation—Twenty-second Day.	W. E. Lloyd.
9:00–10:00	Practice: Chicks Taken to the Brooder.	W. E. Lloyd.
10:00–11:00	Lecture: Poultry Feeding.	J. E. Dougherty.
11:00–12:00	Lecture: Petroleum Products, Fuel, and Fuel Oil.	James Koeber.
12:00–12:10	Practice: Brooding.	W. E. Lloyd.
1:00– 3:00	Lecture: White Diarrhea in Chicks.	J. E. Dougherty.
3:00– 5:00	Practice: Examination and Discussion of Manure Spreaders and Mowers.	James Koeber.
5:00– 5:30	Practice: Brooding.	W. E. Lloyd.

Oct. 31—	8:00– 9:00	Practice: Brooding.	W. E. Lloyd.
	10:00–12:00	Practice: Irrigation of Field Crops.	S. H. Beckett.
	12:00–12:10	Practice: Brooding.	W. E. Lloyd.
	5:00– 5:30	Practice: Brooding.	W. E. Lloyd.
Nov. 2—	8:00– 9:00	Practice: Brooding.	W. E. Lloyd.
	10:00–11:00	Lecture: Poultry Feeding.	J. E. Dougherty.
	11:00–12:00	Lecture: Soil Chemistry.	C. B. Lipman.
	12:00–12:10	Practice: Brooding.	W. E. Lloyd.
	1:00– 3:00	Practice: Soil Chemistry.	Alfred Smith.
	5:00– 5:30	Practice: Brooding.	W. E. Lloyd.
Nov. 3—	8:00– 9:00	Practice: Brooding.	W. E. Lloyd.
	9:00–10:00	Lecture: Irrigation of Orchards.	B. A. Etcheverry.
	10:00–11:00	Lecture: Alfalfa Culture.	B. A. Madson.
	11:00–12:00	Lecture: Poultry Feeding.	J. E. Dougherty.
	12:00–12:10	Practice: Brooding.	W. E. Lloyd.
	1:00– 2:00	Lecture: Farm Labor.	R. L. Adams.
	3:00– 5:00	Practice: Identification and Mixing Poultry Feeds.	J. E. Dougherty.
	5:00– 5:30	Practice: Brooding.	W. E. Lloyd.
Nov. 4—	8:00– 9:00	Practice: Brooding.	W. E. Lloyd.
	9:00–10:00	Lecture: Annual Hay Crop.	B. A. Madson.
	10:00–11:00	Lecture: Use of the Steel Square.	H. L. Belton.
	11:00–12:00	Lecture: Soil Bacteriology.	C. B. Lipman.
	12:00–12:10	Practice: Brooding.	W. E. Lloyd.
	1:00– 3:00	Practice: Soil Bacteriology.	Alfred Smith.
	3:00– 4:00	Lecture: Poultry Feeding.	J. E. Dougherty.
	5:00– 5:30	Practice: Brooding.	W. E. Lloyd.
Nov. 5—	8:00– 9:00	Practice: Brooding.	W. E. Lloyd.
	9:00–10:00	Lecture: Irrigation of Orchards.	B. A. Etcheverry.
	10:00–11:00	Lecture: Annual Leguminous Crops.	B. A. Madson.
	11:00–12:00	Lecture: Farm Accounts. Use of Cost Data.	R. L. Adams.
	12:00–12:10	Practice: Brooding.	W. E. Lloyd.
	1:00– 3:00	Practice: Farm Management.	R. L. Adams.
	3:00– 5:00	Practice: Making Lice Powder and Disinfectants.	J. E. Dougherty.
	5:00– 5:30	Practice: Brooding.	W. E. Lloyd.
Nov. 6—	8:00– 9:00	Practice: Brooding.	W. E. Lloyd.
	10:00–11:00	Lecture: Principles of Breeding.	J. E. Dougherty.
	11:00–12:00	Lecture: Factors Concerned in Constructing Buildings.	H. L. Belton.
	12:00–12:10	Practice: Brooding.	W. E. Lloyd.
	1:00– 3:00	Lecture: Fattening Farm Poultry for Market.	J. E. Dougherty.
	3:00– 5:00	Practice: Cutting Model Rafters, etc.	H. L. Belton.
	5:00– 5:30	Practice: Brooding.	W. E. Lloyd.

Nov. 7— 8:00– 9:00	Practice: Brooding.	W. E. Lloyd.
10:00–12:00	Practice: Construction and Use of Concrete Pipe Lines.	S. H. Beckett.
12:00–12:10	Practice: Brooding.	W. E. Lloyd.
5:00– 5:30	Practice: Brooding.	W. E. Lloyd.
Nov. 9— 8:00– 9:00	Practice: Brooding.	W. E. Lloyd.
10:00–11:00	Lecture: Breeding for Eggs or Meat Production.	J. E. Dougherty.
11:00–12:00	Lecture: Soil Bacteriology.	C. B. Lipman.
12:00–12:10	Practice: Brooding.	W. E. Lloyd.
1:00– 3:00	Practice: Soil Bacteriology.	Alfred Smith.
5:00– 5:30	Practice: Brooding.	W. E. Lloyd.
Nov.10— 8:00– 9:00	Practice: Brooding.	W. E. Lloyd.
9:00–10:00	Lecture: Pumping Plants for Irrigation.	B. A. Etcheverry.
10:00–11:00	Lecture: Fodder and Silage Crops.	B. A. Madson.
11:00–12:00	Lecture: Marketing Poultry Products to Best Advantage.	J. E. Dougherty.
12:00–12:10	Practice: Brooding.	W. E. Lloyd.
1:00– 2:00	Lecture: Renting and Leasing Land; Selling Service, Hiring Men, Loans, etc.	R. L. Adams.
3:00– 5:00	Practice: Killing, Picking and Dressing Fowls for Market.	J. E. Dougherty.
5:00– 5:30	Practice: Brooding.	W. E. Lloyd.
Nov.11— 8:00– 9:00	Practice: Brooding.	W. E. Lloyd.
9:00–10:00	Lecture: Root and Soiling Crops.	B. A. Madson.
10:00–11:00	Lecture: The Use of the Forge.	R. C. Ingrim.
11:00–12:00	Lecture: Bacteria of the Soil.	C. B. Lipman.
12:00–12:10	Practice: Brooding.	W. E. Lloyd.
1:00– 3:00	Practice: Bacteria of the Soil.	Alfred Smith.
3:00– 4:00	Lecture: Diseases and Parasites.	J. E. Dougherty.
5:00– 5:30	Practice: Brooding.	W. E. Lloyd.
Nov.12— 8:00– 9:00	Practice: Brooding.	W. E. Lloyd.
9:00–10:00	Lecture: Pumping Plants for Irrigation.	B. A. Etcheverry.
10:00–11:00	Lecture: Crop Rotation.	B. A. Madson.
11:00–12:00	Lecture: Farm Law.	R. L. Adams.
12:00–12:10	Practice: Brooding.	W. E. Lloyd.
1:00– 3:00	Practice: Farm Management.	R. L. Adams.
3:00– 5:00	Practice: Poultry Disease Clinic.	J. E. Dougherty.
5:00– 5:30	Practice: Brooding.	W. E. Lloyd.
Nov.13— 8:00– 9:00	Practice: Brooding.	W. E. Lloyd.
10:00–11:00	Lecture: General Review and Summing Up.	J. E. Dougherty.
11:00–12:00	Lecture: Welding and Tempering.	R. C. Ingrim.
12:00–12:10	Practice: Brooding.	W. E. Lloyd.
1:00– 3:00	Lecture: Inheritance of Heavy Laying Qualities in a Fowl.	J. E. Dougherty.
3:00– 5:00	Practice: Forge and Welding.	R. C. Ingrim.
5:00– 5:30	Practice: Brooding.	W. E. Lloyd.
Nov.14— 8:00– 9:00	Practice: Brooding.	W. E. Lloyd.
10:00–12:00	Demonstration: Inspection of Irrigation System of the Farm.	S. H. Beckett.
12:00–12:10	Practice: Brooding.	W. E. Lloyd.

THE COLLEGE OF AGRICULTURE

The College of Agriculture of the University of California has a number of activities besides the Farmers' Short Courses, outlined in this Announcement. There are over 500 students taking four-year courses in Agriculture at Berkeley, leading to the degree of Bachelor of Science. There are 210 students registered in the three-year course at the University Farm. The College of Agriculture is also conducting thirty-two courses in Agriculture by correspondence, with an enrollment of over 5000 persons. Through its Agricultural Extension Division it conducts farmers' institutes, movable schools, and, through the cooperation of transportation companies, gives lectures on agriculture by means of educational trains. Advice concerning farm questions is given through personal visitation or by correspondence. In attending to individual inquiries and other correspondence, over 50,000 letters were written last year. To facilitate this work a system of county farm advisers has been adopted. In order to create a greater interest in practical agriculture in California, the students in the College of Agriculture have established boys' clubs in eighty high schools.

The foundation for all the work of the College of Agriculture lies in its investigations, carried on by members of the Agricultural Experiment Station. Over one hundred different experiments have been taken up during the present year. The results of these experiments are published in bulletins from time to time and sent free to any citizen of the State who may apply. Applications may be addressed to the Director of the Agricultural Experiment Station, University of California, Berkeley, California.

Four-Year Courses in Agriculture.—Students wishing to enter any one of the sixteen courses in the College of Agriculture will apply to the Recorder of the Faculties, University of California, Berkeley, California, for the Prospectus of the College

of Agriculture, which gives a full outline of these courses, and for proper blanks for submitting the record of their high school work. Only students who have been graduated from an accredited high school, or its equivalent, are able to enter these courses. The freshman and sophomore years must be spent on the University campus at Berkeley, but one or more semesters of the junior and senior years may be taken at the University Farm at Davis or elsewhere. The place of study during the last two years is controlled by the particular course or major subject pursued. The following courses in major subjects are offered: Agricultural Education, Agronomy, Pomology, Citriculture, Landscape Gardening and Floriculture, Viticulture and Enology, Soils and Fertilizers, Nutrition, Agricultural Chemistry, Animal Husbandry and Veterinary Science, Poultry Husbandry, Dairy Industry, Entomology, Parasitology, Plant Pathology and Irrigation. New students register August 14 and 15, 1914.

The Three-Year Course in Agriculture.—This course is given at the University Farm at Davis. During the first year students who are not graduates of high schools are required to take certain fundamental courses in chemistry, botany, English, commercial arithmetic, etc. Beginning with the second year, students may specialize if they choose, either in Animal Husbandry or Horticulture. High school graduates may complete the work in two years. No student is permitted to enter the three-year course at the University Farm School at Davis below the age of eighteen, unless he is a graduate of a high school of recognized standing. Those who are not graduates of high schools are required to pass an entrance examination in English composition and arithmetic. These examinations are given by county superintendents in nearly all the counties of the State. Applications for admission should be sent to the Dean of the University Farm School so as to reach him, if possible, before September 1. The University Farm School opens on September 18, 1914.

[Application form on reverse]

UNIVERSITY OF CALIFORNIA—COLLEGE OF AGRICULTURE

UNIVERSITY FARM, DAVIS, CALIFORNIA

FARMERS' SHORT COURSES, 1914

APPLICATION FORM

I desire to attend the Short Course in .....

.....

My occupation is .....

.....

My experience in farming, dairy, creamery, stock raising, fruit growing, grape growing, and poultry has been .....

.....

.....

.....

(Signed) .....

Home Address .....

.....

Age .....

Date of Application .....

It will be helpful to us to know approximately the expected attendance upon the courses before their time of beginning and we thus ask all to fill out and mail the above application as soon as the decision to attend is reached. Address:

Dean, University Farm School,

Davis, California.

UNIVERSITY OF CALIFORNIA BULLETIN

A SERIES IN THE ADMINISTRATIVE BULLETINS

OF THE UNIVERSITY OF CALIFORNIA

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These Bulletins include:

The Circular of Information, Colleges of Letters, Sciences, and Engineering.

The Annual Announcement of the Summer Session.

The Annual Announcement of the Colleges of Dentistry, Law, Medicine, and Pharmacy.

The President's Annual Report.

The Prospectus of the College of Agriculture.